Tacoma City of Tacoma
Public Works Department

March 31, 2005

Dave Peeler
Water Quality Program Manager
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504

Dear Mr. Peeler:

This report is submitted by the City of Tacoma pursuant to Section S10 of the National Pollutant Discharge Elimination System and State Waste Discharge General Permit for stormwater discharges from municipal separate storm sewers for the South Puget Sound Water Quality Management Area. This report covers the year 2004.

I certify under penalty of law, that this document and any attachments, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

If you have any questions regarding the enclosed report, please contact John Burk, P.E. at 253-502-2103.

Sincerely,

James Parvey, P.E.
Public Works Division Manager
Science & Engineering Division

JP:CLS:crt (H:\CStrand\2004 Annual NPDES Report Cvr Ltr)

City of Tacoma
Municipal Stormwater NPDES Permit

2004 Annual Report

This report provides an update of the stormwater program activities conducted by the City of Tacoma during 2004.

Submitted pursuant to Special Condition S10 of the National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for discharges from municipal separate sewers for the South Puget Sound Water Quality Management Area and the portion of the Kitsap Water Quality Management Area located in Pierce County

Municipal Stormwater NPDES Permit Number WASM11001

Submitted by:
Tacoma Public Works
Environmental Services/Science and Engineering Division
2201 Portland Avenue
Tacoma, WA 98421

March 31, 2005

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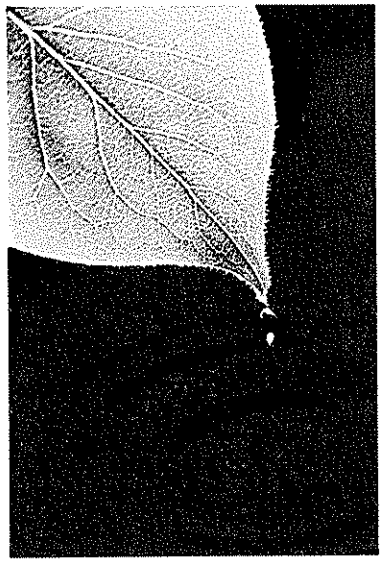


Water

Water: majestic,
Live-giving, creation's jewel.
World's greatest treasure.

2004 Annual Stormwater Report

INTRODUCTION

This report is being submitted by the City of Tacoma pursuant to Special Condition S10 of the National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for discharges from Tacoma's municipal separate storm sewer system. This annual report covers the reporting period January 1, 2004, through December 31, 2004.

Tacoma received its NPDES Municipal Discharge Permit from the Washington State Department of Ecology (Ecology) in 1995. In 1999, the City's Stormwater Management Program (SWMP) was approved by Ecology as meeting the requirements of that permit. The permit was expected to expire in 2000, but was administratively extended by Ecology and has not yet been reissued.

Comments or questions regarding this annual report can be directed to Christy L. Strand, P.E., Tacoma Public Works Department, Environmental Services/Science and Engineering Division at 253-502-2105 or cstrand@cityoftacoma.org.

1. Status of Implementing the Components of the City's Surface Water Management Program

This report describes the implementation of the City of Tacoma's Surface Water Management Program (SWMP) during 2004. The following reports, documents and activities were completed in 2004 as per the SWMP schedule.

- The 2003 Annual Report was submitted to Ecology.
- The second year of the City's new "Make a Splash" Stormwater Grant Program promoting community environmental education, protection and restoration projects was implemented and is ongoing in 2005.
- A variety of ongoing monitoring activities were done including activities related to shorelines, wetlands and creeks.
- Surface water staff led the second year of a City-wide effort to address the West Nile Virus.
- The City continued to implement the Regional Roads Maintenance Program for the Endangered Species Act.
- In-water cleanup work continued on the Thea Foss and Wheeler-Osgood Waterways Superfund Site.
- The Plan Review staff continued to work on several very large projects, including the new Narrows Bridge, the addition of HOV lanes to SR 16 and I-5, the City's new Convention Center which was completed in late 2004, the University of Washington – Tacoma and the rebuilding of Salishan, a public housing project with over 1000 dwelling units.
- Other major construction projects that required a great deal of staff time included the Burlington Northern Santa Fe Railroad realignment of their mainline tracks in the vicinity of East D Street and the extension of Sound Transit's commuter rail from Freighthouse Square to the City of Lakewood.
- A paper titled "Preventing Sediment Recontamination in an Urban Waterway, Tacoma, Washington" was presented by one of the engineers in the Surface Water Program at the 77th Annual WEFTEC 2004 Conference on October 6, 2004. The paper focused on the City of Tacoma's Thea Foss Waterway Stormwater Source Control Strategy.
- Tours of the City's surface water system were given to a City Councilmember and to staff from the City Attorney's office and from Metro Parks.
- Staff taught the water quality portion of the City's Resource Conservation Steward's class.
- Staff submitted four abstracts to the StormCon 2005 National Conference, one of which was directly accepted and one which may be accepted later.

S7B1 Stormwater Management Program Planning Process

Surface Water Utility staff worked with managers and staff from the Public Works Department, Community Relations and Tacoma Public Utilities to compile the information needed for this report. Public Works staff from the Science and Engineering, Wastewater Operations, Maintenance, Streets and Grounds, Construction, Solid Waste Utility and Building and Land Use Services Divisions assisted. Tacoma Public Utilities staff from Tacoma Power and Tacoma Water also provided information used in this report. Participation by elected officials and the public took place in 1995, 1996, 1999, 2000, 2001, 2002, 2003 and 2004.

It is anticipated that new staff will be added in 2005.

Tacoma's Surface Water Utility, along with the Solid Waste Utility and the Wastewater Utility, has a customer advisory panel. This panel is called the Environmental Services Customer Advisory Panel (ESCAP) and has been providing citizen oversight of the Surface Water and the other Public Works utilities for approximately ten years, since their establishment by the City Council. Panel membership reflects the various user groups of the utilities. Members are recruited from the single- and multi-family residential, government, commercial and industrial sectors. Currently, all three panels meet concurrently, generally once each month, to receive presentations on various utility programs. ESCAP responsibilities include providing oversight into the user rates revision process, reviewing and critiquing major project proposals, administrative policy changes or additions, as well as proposing new customer service programs and policies resulting from their own brainstorming efforts, and presenting ideas and requests gathered from their own constituent groups.

During 2004, the Environmental Services Customer Advisory Panel received presentations on the West Nile Virus, Leach Creek, Surface Water Utility Rates, the Seattle Ship Canal Stormwater Study and the Foss Waterway Superfund Cleanup.

The City implemented a new computer system in late 2003. This system replaces the various computer systems that the City had been using. The new system is used not only for fiscal and personnel programs, but also for all data management City-wide. Some of the new modules are still being refined.

S7B2 Water Quality Problems, Needs and Priorities

Analysis of Needs and Priorities

The City's analysis of needs and priorities was included in the SWMP that Ecology approved. The SWMP includes a prioritized list of all of the City's unmet stormwater needs. The bulleted items on the first page of this report highlight many of the unmet needs that were addressed in 2004.

S7B3 Legal Authority

Adoption and Enforcement of Ordinance Containing Standards Equivalent to the Minimum Requirements of Ecology's Stormwater Management Manual

The City's ordinance, Chapter 12.08 of the City Code includes the minimum requirements from the Surface Water Management Manual, the authority to inspect private businesses and the ability to require maintenance of private stormwater best management practices (BMPs). It also authorizes the Public Works Director to implement the Surface Water Management Manual. A draft Enforcement Response Plan has also been prepared and is being reviewed by management. It will be finalized in 2005.

ADOPTION AND ENFORCEMENT OF ORDINANCE PROHIBITING POLLUTION DISCHARGES TO THE CITY'S MUNICIPAL STORMWATER SYSTEM

The City's previous ordinances have prohibited the discharge of pollutants to the City's stormwater system for many years. The newly revised ordinance does also.

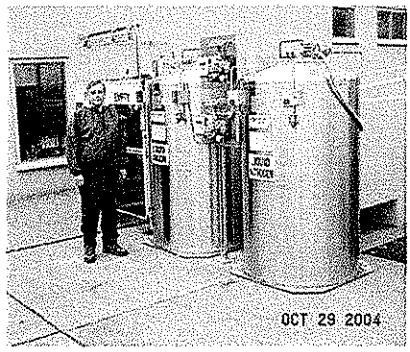
S7B4 Monitoring

Please refer to Section S12 Thea Foss Waterway Basin Program for additional information on monitoring activities in the Foss Basin.

On September 9, 2003, the City received and City Council accepted a $500,000 grant from the Federal Highway Administration, 2003 Transportation Community and System Preservation (TCSP) Pilot Program for the Thea Foss Waterway Stormwater Study. The application indicated that the City could use the grant to continue and expand the study and evaluation of the effectiveness of various treatment methodologies for stormwater from roads and highways using the Ship Canal Test facility in Seattle. Approximately half of the grant will be spent on this project. The City has entered into an Interagency Memorandum of Agreement (IMOA) with the Washington State Department of Transportation (WSDOT) for participation in a study of structural stormwater controls. Seattle Public Utilities is also participating in the project. In addition to the Ship Canal Study, the City is currently looking for additional study sites in Tacoma to apply the remaining grant amount.

Two stormwater treatment vault technologies are being tested including the StormFilter, and AquaSheild – AquaFilter. The project will include monitoring 15 storms for each technology. The project will end in August 2006.

A report on each technology will evaluate the treatment performance of each treatment system. The City will continue to work closely with WSDOT, Seattle Public Utilities, Taylor Associates, and the vendors. Following the completion of each technology's testing period, the City will evaluate the technology's effectiveness and applicability and reasonableness for use of this technology within the Thea Foss Watershed. 'Reasonable' shall take into consideration effectiveness, maintenance requirements, flood control and cost in comparison to the effectiveness achieved to date in the Thea Foss Watershed as a result of the current source control program.



Laboratory Staff

The City is implementing an ongoing creek monitoring program. A community education and involvement program was implemented by the Stream Team in the Western Slopes area where houses are located next to or in close proximity to Crystal Creek, Crystal Springs Creek and Titlow Park Gulch Creek. We shared information with the residents about what they can do to help protect the creeks. A report about this activity is titled

"Titlow-Western Slopes Public Education and Outreach Project Description and Evaluation, December 2004" and is included in Appendix A.

The City of Tacoma provides $25,000 on a yearly basis to help sponsor the Pierce Conservation District Stream Team. The Stream Team has many volunteers that do important, but limited, stream monitoring in several streams including Swan Creek, Puget Creek, Mason Creek, Garfield Creek, Wapato Creek and Hylebos Creek. They monitor for pH, temperature, and other basic parameters. Information about these monitoring activities is included in Appendix B in a report titled "Urban Creek Assessment Report – 2004 Update on Monitoring Results for Tacoma's Larger Creeks: Swan, Hylebos, Puget, Mason, Wapato and Garfield, March 31, 2004". Wapato, Snake and China Lakes will be added to this monitoring program in 2005.

Mason Creek

The City contracted with an environmental group, Citizens for a Healthy Bay (CHB), for environmental hotline services. CHB's hotline number (253-383-2429) was operational throughout 2004. Fifty-two calls were received in 2004. As in the past, most of the calls were related to petroleum products. Thirty-three calls addressed problems in the Thea Foss Waterway and Commencement Bay and nine were related to the Hylebos Waterway. Most of the calls received were from citizens. Twenty-five calls were referred to the City and seventeen were referred to Ecology.

Once per month minimum, the City monitors the shorelines along Commencement Bay and the Narrows using a City-owned boat in conjunction with Baywatch. Ecology staff participated in one of the Baywatch patrols. The monitoring is done at low tide to the extent practicable, and portions of the shoreline are videotaped. Any identified problems are addressed. If problems are detected during a patrol, an Incident Report Form is filled out documenting the incident and the follow-up action or referral. The type of incidents that the boat patrol monitored during 2004 includes: suspicious stormwater discharges, sheens on the water, construction activity along the shoreline, and waterfront businesses' compliance with appropriate best management practices (BMPs). Dredging activities, derelict vessels and in-water cleanups are also monitored. The benefit of these patrols comes not only from correcting identified problems, but also from raising the awareness of businesses and the general public about proper operations near the water. Copies of the videotapes and the Patrol Report Forms are available upon request.

The Tacoma Police Department also added a new police boat and also uses jet skis as part of a Homeland Security Program to inspect and help protect Commencement Bay.

Staff from Source Control and from Ecology provided training to the Police staff about what to look for with respect to illicit discharges when they're out on the water.

Citizens for a Healthy Bay, a local environmental group, sponsors a Baykeeper Program. The person hired as the bay keeper patrols the City's many miles of shoreline in a boat. A new boat was placed into service in August. The City provided $15,000, an increase of $5,000 from past years, in financial support for this program in 2004, and coordinates its efforts with those of this environmental group. The following information summarizes Citizens for a Healthy Bay's accomplishments in various monitoring related programs designed to help protect water quality in Commencement Bay.

Citizens for a Healthy Bay Summary

Task	2002	2003	2004
Baykeeper Activities			
On the water patrols	48	29	75
Patrol hours	69	68	203
Kayak patrols	24	39	11
Walking patrols	60	64	5
Training events	4	6	6
Other Activities			
Hotline reports	51	39	52
# involved in boater education	0	200	40
# of citizen keeper volunteers	0	92	22
NPDES industrial permit reviews	4	3	9
New EnviroStar Marinas	1	0	1

The Tahoma Salt Marsh Restoration Project near Ruston Way was completed in March 2004 when over 6,000 plants were installed by 160 volunteers. This was the fourth of five sites to be completed under the City's Natural Resource Damages Assessment (NRDA) Consent Decree. A five-year monitoring period is required and all completed sites are monitored on an ongoing basis. The Middle Waterway site, completed in 2000, and the Swan Creek site, completed in 2001, are monitored annually. The Olympic View site, completed in 2002, is monitored biannually. The remaining site, Hylebos Marsh, is located near the Hylebos Waterway between Taylor Way and Alexander Way, south of East 11th Street.

Developers are required to monitor wetlands in areas where wetlands could be impacted by their development. They are required to submit annual reports for monitoring for three to five years. These are summary reports. Wetland monitoring is site-specific. For example, some permits require sampling for fish many times during one season. The Building and Land Use Services Division employed a consulting firm in 2004 to perform inspection and permit analysis beginning in September in order to allow the wetlands specialist time to work on the rewrite of the City's Critical Areas Preservation Ordinance. These monitoring activities include review of monitoring reports submitted as part of the permit approval process, tracking violations, monitoring shorelines, and field visits. The wetlands staff made approximately 110 field inspections in 2004 to check monitoring reports, look at violations and for issuance of permits. Thirty six wetland permits were issued and fourteen enforcement actions were taken.

There is an official weather station at the Central Wastewater Treatment Plant and four rain gauges located throughout the City. Rainfall data has been recorded since 1953.

The rain gauge information is recorded and used as needed. The City contracts with a weather service and receives weather reports twice a day. This information provides an early warning of heavy rains and potential flooding. Maintenance crews are dispatched to proactively check and maintain trouble spots prior to anticipated heavy rains, to ensure the proper operation of the system.

STORM SEWER MONITORING IN COMMERCIAL/INDUSTRIAL AREAS
Please refer to Section S12 Thea Foss Waterway Basin Program for additional information about monitoring in commercial and industrial areas.

S7B5 FISCAL ANALYSIS (FROM 2003)
The operation and maintenance of the Surface Water Utility is funded from service charges. No revenue is derived from taxes from the City's general fund. Major capital improvements are funded from revenue bonds and pay-as-you-go financing. The service charges are reviewed annually to insure that they are adequate to pay operation and maintenance costs, debt service, capital improvements and taxes. All changes to the rates must be approved by the City Council.

SURFACE WATER UTILITY
During the reporting period of January 1, 2004, through December 31, 2004, the Surface Water Utility spent $27.8 million. The expenditure categories are as follows:

		2003	
OPERATIONS:			
Transmission			
Personal Services	$ 1,077,282.85		
Supplies & Other Services and Charges	$ 509,032.11		
Miscellaneous Capital Outlay	$ 0		
Total	**$ 1,586,314.96**	1,089,686.	+
Pumping			
Personal Services	$ 89,469.82		
Supplies & Other Services and Charges	$ 186,565.87		
Miscellaneous Capital Outlay	$ 0		
Total	**$ 276,035.69**	163,234.	+
Holding Basins			
Personal Services	$ 43,656.86		
Supplies & Other Services and Charges	$ 71,183.85		
Miscellaneous	$ 0		
Total	**$ 114,840.71**	286,933	—
Engineering			
Personal Services	$ 597,349.42		
Supplies & Other Services and Charges	$ 207,207.08		
Miscellaneous Capital Outlay	$ 0		
Total	**$ 804,556.50**	638,339	+

		2003	Δ
Source Control			
Personal Services	$ 1,075,467.19		
Supplies & Other Services and Charges	$ 53,008.69		
Miscellaneous Capital Outlay	$ 0		
Total	**$ 1,128,475.88**	10,752,348	—
Laboratory			
Personal Services	$ 218,801.83		
Supplies & Other Services and Charges	$ 67,634.54		
Miscellaneous Capital Outlay	$ 0		
Total	**$ 286,436.37**	391,354.	—
MISCELLANEOUS:			
General Services			
Personal Services	$ 515,805.34		
Supplies & Other Services and Charges	$ 4,250,569.20		
Miscellaneous Capital Outlay	$ 0		
Depreciation	$ 1,831,863.52		
Total	**$ 6,629,927.02**	3,886,305	+
Debt Service			
Principal and Interest	$ 4,518,100.00*		
Other	$ 0		
Total	**$ 4,518,100.00**	3,068,987	+
Other Department Divisions not included above:			
Miscellaneous:			
Unknown at this time			
Capital Projects:			
Foss Waterway Cleanup	$7,812,242.83 **		
NRDA	$ 499,352.81		
Misc. Superfund	$ 31,688.96		
Miscellaneous	$ 4,160,505.95		
Total	**$12,503,790.55**	10,684,739	+
Grand Total	**$27,816,788.72**	31,120,902	—

*Note: Increase due to adjustment of Bond Fund depreciation.
**Note: This does not include the recorded liability of $29,695,938.00

The surface water rates pay to operate and maintain public stormwater pipes, detention ponds, pump stations and more than 17,000 catch basins. In addition, the City uses these funds to improve water quality and to comply with stormwater permit regulations and ongoing Thea Foss Waterway Superfund cleanup. Relating the budget amount in each of the above categories to the actual expenditures is very difficult at this time. Some activities are budgeted in one activity or organization, but are actually spent and therefore charged to a different activity or organization. As a result, the actual expenditure in any one line item does not necessarily relate to the budget number for

that same category. Some capital expenditures may be budgeted in the operating budget but the expenditure is taken from the capital budget and vice versa.

The expected revenue from rates in 2004 is $39.7 million. The anticipated expenditures for the year 2004 will likely be about the same as for the year 2003. This is due to increasing activities in the Surface Water Utility. There will be increased emphasis on source control and public education. In addition, there are numerous planning, design and construction activities funded by the utility. Some of these are to comply with federal and/or state orders, consent decrees, mandates, etc.

S7B6 Data Management

Development of Land Cover Information Maps and Data

A first draft of the stormwater Geographical Information System (GIS) mapping system has been constructed. It is currently being corrected and updated, but it is not fully field checked. The City currently has two full-time staff persons updating and correcting the system using recorded drawings, global positioning system (GPS) points and field inspections. Currently, 44 of the 64 sections in the City have been completed and the project is scheduled to complete the remaining sections by fall 2005. The City has completed updating all catch basins in the City's rights-of-way with the data collected from a GPS project completed in 2004. The second phase of the catch basin collection project, which will be to collect data for catch basins outside the City right-of-way, has started and 2 of the 64 sections have been completed. Currently approximately 60% of the outfalls have been mapped and this project is scheduled to be completed by the end of 2005. The work management data and critical information of the stormwater GIS system has been updated in the City's new Enterprise Resource Planning (ERP) tool known as SAP, where the data and information will be maintained and updated. The entire City map of wetlands was completed in 2000 and is currently being updated. The collection of maps in the City-wide GIS is now available to both internal and external customers via the City's Public Works' GovMe website.

Water Quality Complaint Investigations and Database Development and Maintenance

A customer request database known as the Spills and Complaints Database was developed and put into place in early 2002. It is used on a regular basis by the Surface Water source control staff to track complaints, spills, flooding and investigations. A corresponding Business Inspection Database was developed in late 2003 and was put into use in early 2004 to track inspections of businesses within the City limits. The City currently has four full-time surface water source control staff persons. Their first priority is responding to complaints and spills and their second priority is inspecting the approximately 14,000 businesses within the City limits, which does not include home businesses. A lot of their time is spent on issues related to the Thea Foss Waterway Superfund Site. The City is currently assessing the need for more surface water source control staff to handle the number of business inspections. Also in correlation with the Spills and Complaints Database, a Claims Database was developed in late 2003 and put into use in early 2004 to track all filed and/or potential surface and wastewater claims. These databases were developed and based on addresses to enable the source control staff to view and research spills, complaints, flooding, investigations, business inspections and claims via an internal website. Currently revisions are still being made to these databases, to include research for uploading and synchronization with the City's SAP system.

DESCRIPTION AND LOCATION OF MAJOR STRUCTURAL BMPS AND OTHER STRUCTURAL CONTROLS

This type of mapping is now available and is regularly updated. The information is available on the City's website under "Map Guide."

The City's GPS crew completed several GPS mapping efforts including mapping all of the catch basins and the duck pond drainage in Point Defiance Park, mapping the emergency flood response sites and the NRDA habitat restoration sites. An additional 462 catch basins within the City's rights of way were mapped including location and attributes. The crew also locates manholes, catch basins, pipes and drainage sources for the Science and Engineering staff as requested. The GPS crew mapped the Union Pacific and Burlington Northern Santa Fe (BNSF) rail yard drainage in 2004 and is currently mapping all of the other private stormwater systems in the City, which is a very large project.

MAPPING STORM SEWER OUTFALLS AND TRIBUTARY CONVEYANCES

This type of mapping has been available for many years and is regularly updated.

Another project completed by the GPS crew included mapping of all of the outfalls between the Foss Waterway and Titlow Beach, which included the west side of Commencement Bay and along the Narrows. Some of these sites required a low tide and daylight hours, the combination of which is only found in the summer.

The crew also mapped sites for the urban creek monitoring program and mapped Dash Point, Joe's and Agnes Creeks and Puget Gulch and the trails in the gulch. Sites that need to be cleaned in the South Tacoma Channel were also mapped.

The following equipment and procedures were used in all stormwater-mapping projects. A new Trimble GEO XT was used to map point, line, and area features. A Sony Mavica digital camera was used to record photographs of locations, views, and conditions of stormwater assets in the field. A Trimble Pathfinder was used to download data from the GPS unit and convert data into shapefiles. ArcView and ArcGIS are used in the office to edit data and create maps. Edited data is passed on to the City's GIS system.

S7B7 Intergovernmental Coordination

A lot of intergovernmental coordination takes place in the implementation of the stormwater program as outlined below. Coordination specific to the Thea Foss Waterway also takes place. Please refer to Section S12 Thea Foss Waterway Basin Program for additional information about coordination activities with respect to the Foss Waterway.

In 2004, the City reached an agreement with the Puyallup Tribe on payment for past and future charges.

The City is working with the Puyallup Tribe on its East 32nd Street Improvement Project which is being done to improve access to its casino site. The project entails widening East 32nd Street, building a new bridge over the T-Street Gulch and constructing a biofiltration swale water quality facility.

The City reviewed several large projects located within the Port of Tacoma, for compliance with the City's Surface Water Management Manual with respect to water quality devices. Work was completed in a cooperative effort between the Cities of Fife

and Tacoma, Drainage District #23, and the Port of Tacoma to repair a tide gate on the Fife Ditch.

The City is also working with the Tacoma Housing Authority on the first phase of a four phase project called the Salishan HOPE VI Project. A World War II vintage housing project is being replaced with 1,270 new dwelling units. The first phase of the project will utilize bioswales and bioinfiltration swales to provide water quality treatment for runoff from pollution generating impervious surfaces.

We are currently participating with the Pierce Conservation District to develop a wetland mitigation bank in the Flett Wetland. Other parties involved in this effort include the City of Lakewood, the Mountain View Cemetery and Bates Vocational College. Tacoma's involvement includes partial funding with our $5 Conservation District tax, and support, coordination and technical assistance for the project. The Pierce Conservation District is the lead agency. Currently conceptual alternatives have been developed and are being evaluated for feasibility.

A draft alternatives analysis for reducing flooding in the Leach Creek watershed was completed and discussed with the City of Fircrest. They were not interested in a joint maintenance agreement for managing stormwater in the Leach Creek Holding Basin.

The City has entered into an Interagency Memorandum of Agreement (IMOA) with the Washington State Department of Transportation (WSDOT) for participation in a study at the Ship Canal in Seattle of structural stormwater controls. For the City of Tacoma, the overall intent of this IMOA is to work collaboratively to verify the performance of temporary and permanent stormwater treatment technologies, and to evaluate the applicability of these technologies to the conditions in the Thea Foss Waterway. Seattle Public Utilities is also participating in this study. Please refer to Section S7B4 Monitoring for more information on this program.

The City also continues to coordinate with WSDOT on the major improvements being made to SR 16 and I-5 as part of the installation of high occupancy vehicle (HOV) lanes. The coordination includes topics as varied as the installation and relocation of utilities and wetland mitigation. Extensive coordination is also taking place with the "Tacoma Narrows Constructors", the company building the new Narrows Bridge.

The Tri-County Roads Maintenance Program was developed through the Tri-County ESA process. The program was adopted by the City of Tacoma. Training sessions were offered to Tacoma Power staff in 2004.

The City of Tacoma is also participating in Ecology's Technical Review Committee (TRC). The TRC evaluates vendor submissions on emerging stormwater treatment technologies. Based on the evaluation, the technologies may be approved by Ecology, through the TRC, for use as part of a stormwater treatment train and/or as stand alone BMPs (Ecology 2002). The results of these efforts will be used to determine whether effective technologies currently exist for reducing concentrations of contaminants of concern in stormwater.

The City continued to participate in the Puyallup River Watershed Council, the Hylebos Watershed Action Team and the Chambers-Clover Watershed Council. Members of the three groups consist of various municipalities and representatives from business, tribal and environmental interests as well as interested citizens. The first two groups include

membership from King County as well as from Pierce County. The Chambers Creek watershed is located entirely within Pierce County.

The City continued its partnership with Metro Parks Tacoma in order to promote stormwater pollution prevention messages at the Point Defiance Zoo and Aquarium using interactive murals and aquarium laboratory staff.

The new "Make a Splash" Environmental Services, Surface Water Grant Program concluded its first year in 2004 and a second round of grants was implemented later in 2004. The program was implemented to promote community-based projects that provide environmental education, protection and restoration and has proven to be very successful and popular with the community. The number of grants and the dollars granted both increased during the second round. Twenty grants were awarded for a total of almost $40,000. The grants were awarded to very diverse community groups, including the Tacoma Community House, First Presbyterian Church School, the Environmental Education Association of Washington, Boys and Girls Club, the Indochinese Cultural and Service Center and others. The projects are very diverse as well and are described in more detail in Section S7B8i Stormwater Education. The new grant program has and will continue to create many opportunities to partner and coordinate with many different types of groups in Tacoma.

Implementation of the NRDA consent decree during 2004 included coordination between various governmental agencies: The United States Departments of Commerce (National Oceanic and Atmospheric Administration), Interior (Fish and Wildlife Service), and the Environmental Protection Agency, the Washington State Departments of Ecology, Fish and Wildlife, and Natural Resources, the Puyallup Tribe of Indians and the Muckleshoot Indian Tribe. Topics of these meetings included the permitting and design of the Hylebos Marsh project, monitoring and adaptive management for completed restoration sites, environmental protection efforts and general coordination of the consent decree requirements. Intergovernmental coordination was also needed for the monthly Commencement Baywatch Patrols.

Source Control staff attend regional inspector meetings hosted by various municipalities.

During the City's preparation for the possible West Nile Virus arrival in Washington State, coordination took place with the Tacoma-Pierce County Health Department, the Washington State Department of Health and other municipal surface water management staff. Training was also provided.

Source Control staff coordinated with the University of Washington – Tacoma, Environmental Science Program to monitor water quality parameters and take environmental samples in Commencement Bay.

GENERAL COORDINATION FOR MONITORING, MAPPING, DATA MANAGEMENT AND MODELING

The City continues to coordinate a variety of activities with other municipalities and agencies. Issues related to the Flett Drainage Basin are coordinated with Pierce County, Lakewood, the Pierce Conservation District and the Washington State Department of Transportation (WSDOT). Issues related to the cleanup of the Foss Waterway are coordinated with WSDOT, EPA, the Army Corps of Engineers, the Washington State Department of Natural Resources, the Puyallup Tribe, various businesses, the "Utilities" group and with Ecology. Activities related to the T-Street Drainage Basin are coordinated with Pierce County. Activities related to the Leach Creek Drainage Basin are coordinated with the cities of University Place and Fircrest

and the Pierce Conservation District. Activities in NE Tacoma, including the Joe's Creek Drainage Basin, are coordinated with Federal Way. Activities in the Hylebos Creek Drainage Basin are coordinated with the cities of Federal Way, Fife, Milton, and Edgewood, and with Pierce and King Counties. Many activities in the Tideflats are coordinated with the Port of Tacoma.

The City has also coordinated activities with the environmental group, Citizens for a Healthy Bay (CHB). Coordinated activities have included $10,000 in City financial support for the Bay Keeper Program in 2000, 2001, 2002, 2003 and $15,000 in 2004, and funding to support their operation of an environmental hotline. The City also received a Public Information and Education (PIE) grant from the Puget Sound Water Quality Action Team to conduct a pilot research and educational stormwater program in a portion of the Foss Watershed. The City has also worked with CHB on storm drain stenciling and curb marker placement. Partnerships with this environmental group are continuing into 2005.

General Coordination for Control of Stormwater Pollution from Other Jurisdictions

The City continues to coordinate with other jurisdictions and agencies in a variety of ways. The City participates in the NPDES municipal permittees group, the Puyallup River Watershed Council, the Hylebos Watershed Action Team, the Chambers-Clover Creek Watershed Council, and the APWA Stormwater Managers' Meetings. Funds are provided to the Pierce County Conservation District to support the Stream Team, which is sponsored by Tacoma, Pierce County, and the cities of Puyallup, Fife, Sumner, Bonney Lake and Lakewood.

Development of Coordinated SWMPs for Waterbodies Shared with Other Municipal Permittees

The City coordinates with other municipalities to address stormwater concerns in shared waterbodies as described above.

S7B8 Stormwater Control Components

S7B8a Run-off From New Development and Redevelopment

Development of an Ordinance Containing Minimum Technical Requirements Equivalent to Ecology's Manual

The City's Surface Water Management Manual (Manual) was completed in 2002 and implemented on January 1, 2003. This manual regulates stormwater run-off for all new development and redevelopment projects throughout the City, including residential, commercial and industrial sites and roads. The City's manual is based on Ecology's Stormwater Management Manual for Western Washington that was published in August of 2001. The City's manual contains the same minimum technical requirements as Ecology's manual, plus two additional requirements.

Tacoma Municipal Code 12.08 references the Surface Water Management Manual and contains the minimum requirements from the manual and provisions for the inspection of private businesses and the maintenance of private stormwater systems. The ordinance authorizes the Public Works Director to implement the manual. The ordinance was revised during 2002 and the ordinance also went into effect on January 1, 2003. All projects submitting for permits since then have been required to comply with the manual.

The Environmental Services Science and Engineering Division reviews all stormwater and sanitary plans for new development and redevelopment projects. All designs are reviewed for compliance with the minimum requirements including best management practices (BMPs) for erosion control, water quality, and flow control. Plans are also reviewed for compliance with the City's excavation and grading ordinance and the critical area's preservation ordinance. Environmental Services works with both the Building and Land Use Services (BLUS) and Construction Divisions of the Public Works Department to provide plan review for various projects/permits throughout the City, and to review Stormwater Pollution Prevention Plans (SWPPPs) for erosion, sedimentation and pollution control. All stormwater facilities designed by City staff are designed in accordance with the City's manual.

The Environmental Services Wastewater Operations Division also reviews plans for compliance with the Wastewater Pretreatment Standards.

The BLUS Division of the Public Works Department administers the permitting process for all City building permits and land use actions. They collect the permit fees and route all plans to the various City departments for review. BLUS provides conditions for various land use actions such as rezones, subdivisions, wetland and shoreline permits. BLUS inspectors provide the inspections for all private construction projects including grading and erosion control. BLUS also distributes NPDES Construction Notice of Intent Forms to all developers who have projects that will include one acre or more of land clearing activities. These projects require a separate NPDES Permit from Ecology.

The Construction Division of the Public Works Department administers City projects and all other construction work occurring within City right of way. Their administration includes design review and approval as well as inspection of the constructed work itself. Construction Division inspectors verify that work taking place in the right of way meets City standards, including installation and maintenance of appropriate storm water Best Management Practices.

In 2004 the Construction Division oversaw the inspection of City infrastructure work required for several large private projects in Tacoma. These projects included the Gas Lamp Terrace condominiums at S 21st and G Streets, the Puyallup Tribe of Indians casino at East 32nd and Portland Avenue and the Tacoma Housing Authority's Salishan Hope VI residential community. Because of their large size, locations, and site topography; each of these projects presented challenges in achieving compliance with current erosion control and sedimentation standards. The learning experience gained by Construction Division staff working with these contractors will be beneficial for future projects.

Science and Engineering staff now includes two engineering technicians and three engineers including the team lead. By dedicating a specific team to stormwater plan review, the City continued to increase the timeliness and quality of the plan review process in 2004. The team provides pre-submittal consultations that identify surface water design requirements prior to applicants' submission of designs for building permits. These consultations allow the City to identify potential erosion and water quality issues prior to plan submittal. They work closely with the Source Control staff to identify potential source control problems early on. The plan review team also provides comments to the City's Building Official and to the Land Use Administrator to use as conditions on various land use actions.

Two other large construction projects include Burlington Northern Santa Fe Railroad's realignment of their mainline railroad tracks in the vicinity of East D Street. The project crosses both of the City's 96-inch storm lines that discharge to the head of the Foss Waterway. This project will involve work on both of these large storm lines to protect them from the railroad lines. A second project involves Sound Transit's extension of commuter rail to the City of Lakewood. They will be constructing new tracks from Freighthouse Square to South M Street and upgrading existing rail lines from M Street to the Lakewood City limits. This project will also involve protection of existing storm lines and relocation of some of the lines.

A staff person from the Surface Water Program continues to work with both the BLUS Division of the Public Works Department and with Tacoma's Economic Development Department in the development of revisions to the City's Critical Areas Ordinance. This ordinance is implemented by BLUS.

S7B8b Existing Residential and Commercial Development Run-off

The City's current program includes business inspections, drainage complaints, water quality complaints, spill response, interagency coordination, stormwater education, capital improvement projects and a major source control effort in the Thea Foss Waterway drainage basin.

The City has had an ongoing business inspection program for several years. The program focuses on three different types of inspections: Formal business inspections, informal inspections or focused inspections, as well as special projects.

Complaints, Spills and Business Inspections
January 2002 to December 2004

	2002	2003	2004
# of Complaints	195	275	266
Follow-up	88	166	135
# of Spills	48	38	73
Follow-up	40	30	37
# of Inspections – Planned	106	322	208
# of Inspections – Unplanned	106	28	55
Follow-up	93	114	55
Grand Total	**676**	**973**	**829**

One of the inspectors spent three months of 2004 as the Public Works Department intern. He was not available for inspections during that time resulting in numbers of inspections that are lower in 2004 than in 2003. In addition to the numbers shown in the above chart, there were a few that were done by the wastewater source control staff that were not included. The largest classes of complaints received in 2004 involved petroleum products (140), sewage (60), mud, silt or muddy water (48), and water (flooding/standing/drainage) (43).

The following City owned facilities were inspected in 2004: the Asphalt Plant as well as other Streets & Grounds operations, the Tacoma Dome, the Fire Department Maintenance Facility, the Tacoma Rail Railroad Maintenance Facility, the Sign Shop and the Landfill. Time was also spent at the new Police Facility, which is under construction, regarding erosion issues. All of our regional holding basins were also examined for the purposes of determining maintenance needs. Samples were taken and a contract for cleaning and repair is being prepared for work that will be done in

2005. Most of Tacoma Water's drinking water reservoirs were also inspected during their every three year draining and cleaning process. They have changed their procedures and are now using current best management practices where they drain the reservoirs or standpipes and then dechlorinate the water. The remainder is vactored out, sent to swales or routed to the sanitary sewer. We are also working with them to develop a generic Special Approved Discharge (SAD) for their reservoirs and standpipes.

Paint Shop Waste

Numerous Tacoma School District schools were also inspected, including 14 schools that were inspected in response to a WDOE/EPA criminal case (details still confidential) for illegal dumping of waste from school grease traps. Cleaning the grease traps had been contracted to a local office of a northwest company.

Stormwater and wastewater source control inspectors hold a monthly spill/claims meeting to share information, coordinate efforts and debrief on significant events. Training on different topics is also provided at these meetings.

The City has a crew trained in mapping physical features of the landscape using a global positioning system (GPS). This system uses satellite data to accurately locate drainage features in the field. Please refer to S7B6 Data Management above for more information about what the GPS crew did in 2004.

The City has a Washington State Department of Ecology (Ecology) delegated Wastewater Pretreatment Program. The staff that performs these inspections also looks for stormwater problems. The inspection and sampling program staff conducted 83 formal inspections with respect to 38 businesses and 84 sampling events for 25 businesses. Other single purpose visits were conducted and selected sampling of other dischargers was also performed. These inspections and sampling events were completed during the pretreatment program's reporting year, July 1, 2003, to June 30, 2004. The pretreatment staff also review building plans for compliance with the Wastewater Pretreatment Standards and respond to stormwater complaints for the Surface Water Utility staff when they are not available. They also performed 80 oil/water separator inspections in 2004. They also respond to spills for Ecology.

The City has a South Tacoma Groundwater Protection District that is located in the south central part of the City. The ordinance that created the district mainly addresses above and below ground storage tanks. The Tacoma-Pierce County Health Department inspects these businesses for proper chemical storage. Many of the businesses in this district are located in the Thea Foss Watershed. The health

department staff did approximately 64 inspections in 2004. There are 167 businesses with hazardous waste permits, 150 of which pay a permit fee. Most of those that don't pay a permit fee are public facilities such as fire stations. No new facilities were permitted in 2004 due to the pending change in the regulations. The regulation may be rewritten in 2005. All of the above mentioned inspections were done within the South Tacoma Groundwater Protection District.

The City again updated its major storm event emergency plan. The emergency plan requires all surface water staff and many wastewater staff to investigate and abate problems during extreme rainfall events, including processing damage claims against the City. A training workshop was held for the staff in the fall of 2004. A new City-wide radio system was purchased and three radio training sessions were held.

Tacoma has a program called "Tacoma Cares" that focuses on cleanup and revitalization of neighborhoods throughout the City. Each year in cooperation with the community, the program facilitates more than 50 cleanups resulting in the removal of approximately 500 tons of debris, deals with over 1,200 nuisance cases, removes more than 250 junk vehicles from private property and completes more than 15 crime prevention and fence repair projects. The program has a "Blight Mobile" operated by the Solid Waste Utility that helps community groups dispose of litter and debris on streets, alleys and other public rights-of-way. These major efforts have resulted in a cleaner environment, which helps result in cleaner stormwater run-off.

The lower part of Crystal Springs Creek has caused flooding of residential streets in the past. The City is addressing the flooding. In 2003, the City constructed Phase I of a capital improvement project consisting of a bypass stormwater pipe installed to drain a low area in a street. The bypass pipe then conveys stormwater to a trunk line in 6th Avenue. Phase II will be constructed in 2006.

Capital improvement projects in 2004 included the construction of 2800 linear feet of a 48-inch storm drain trunk line in South Tacoma which replaced two 30-inch storm lines. The new trunk line was installed five feet deeper than the existing ones, creating an increase in live detention capacity in the Gravel Pit stormwater holding basin to 17 acre-feet. The Gravel Pit is located west of I-5 at South 84th Street. A new concrete headwall was also constructed as part of this project. Another project included the removal and replacement of 3000 linear feet of old and collapsing storm pipe in downtown Tacoma along South 13th Street. A third project involved the extension of a 24-inch storm pipe by 200 feet to provide adequate capacity in the Port of Tacoma area.

Two decorative public water fountains in the downtown area were disconnected from the surface water system and connected to the sanitary sewer system. When the fountains are cleaned, this rerouting allows the dirty water to be drained to the sewer system instead of requiring it to be vactored out or allowing it to flow into the Foss Waterway.

June 1, 2004, the Pretreatment Program announced a two-year voluntary compliance period for dental offices, during which they are asked to implement Best Management Practices for hazardous wastes. Because dental amalgam contains approximately 50% mercury, installation of an amalgam separator in the wastewater discharge line is an important management practice, required for compliance. Dental offices that achieve compliance with BMPs during the two year period may apply for recognition by the Pierce County EnviroStars Program. Most that fully implement

dental waste BMPs are eligible for the highest, 5 Star, rating. The level of compliance found during inspections that are scheduled for the spring and summer of 2006 will determine whether BMPs will become mandatory for dental offices in the City of Tacoma.

Since April of 1999, the Environmental Services Conservation Loan Program has offered low interest loans for wastewater or stormwater pretreatment, septic system abandonment, and faulty side sewer repair or replacement. In 2004, 60 new loans were made totaling $236,912.92, and 26 existing loans were retired. The program currently has 126 outstanding loans totaling approximately $435,000.

Five homeowners had sewer assessment fees reduced through the Septic Amnesty Program in 2004. This program forgives 50% (up to $10,000) of the sewer LID fee or fee-in-lieu-of-assessment if a residential property is connected to the municipal main within two years after it becomes available.

Tacoma is developing a Grease Waste Management Program to reduce the blockages and overflows caused by grease buildup in the municipal sanitary sewer system. Changes have been made to the Tacoma Municipal Code to aid inspections and enforcement and a public outreach and education program is being assembled. A pilot study to determine the most effective methods in both commercial and residential problem areas is scheduled for 2005.

S7B8c Municipal Storm Sewer Operation and Maintenance

The Public Works Department has an Environmental Services/Maintenance Division that is responsible for maintaining both the storm drainage and the sanitary sewer systems. Storm ditch and detention pond maintenance decreased in 2004 which is attributable to major work done by contractors. The amount of storm mainline maintenance and TV inspection nearly doubled in 2004. Storm problem calls decreased because there were no major storms last year. The following table indicates the level of maintenance efforts that were completed during 2004.

January 2004 to December 2004

# of CBs Checked and Cleaned	4,172
# of Scuppers Cleaned	197
# of Culverts Maintained	192
# of Ditches Checked and Maintained	114
# of Detention Ponds & Holding Basins Checked and Maintained	91
# of Manholes Checked and Cleaned	364
# Storm Drainage & Flooding Problems Calls	171
Total # of Feet Maintained:	66,600
Mainline Inspections: # of Feet TV'ed	68,100

The Environmental Services/Maintenance Division is continuing the development of a comprehensive maintenance program that will extend the life of facilities and systems, and improve system reliability and performance. This program includes maintenance improvements and modifications, monitoring and evaluation of system performance, and the development of specific performance standards for each

maintenance activity. Some of the critical maintenance activities included in the maintenance program are: TV inspections, catch basin inspection and cleaning, ditch inspection and maintenance, and the cleaning of scuppers and sumps.

Sampling of vactor waste on a quarterly basis is no longer required. The City disposed of the storm vactor waste in the past through Fife Sand & Gravel, which was licensed by the Tacoma-Pierce County Health Department, but now the waste is being taken to the Asphalt Plant and is being disposed under their Solid Waste permit.

The City's storm drainage system grew larger in 2004. A total of 8,289 linear feet of storm pipe was installed in 2004 through the private work order process, with an estimated value of $1,093,545. These lines were installed as part of new development projects and were paid for by the developers using City approved materials and methods. The lines were then turned over or "donated" to the City and became part of the City's system for future operation and maintenance. A total of 6,396 linear feet of publicly funded new storm pipe was added during 2004 and 8,555 linear feet of old existing storm pipe was replaced using public funds. Most of the new storm pipe was added as part of street improvements and the new pipe replaced existing pipe that was "retired".

S7B8d City Road Operation and Maintenance

The Streets and Grounds Division of the Public Works Department is responsible for road operation and maintenance. This division sweeps the streets, does manual cleaning of stormwater features such as culverts and catch basin grates, has a de-icing and snow removal program, and responds to spills on roadways. Their fall leaf pickup program has been almost entirely replaced by the City's free curbside recycling program for yard waste.

Operations in 2004 were very similar to those in 2003. The City had two or three sweepers in use on a daily basis. Approximately 4,300 miles of streets were swept and 4,500 cubic yards of material were collected. This street waste was disposed of in a licensed, mixed municipal solid waste landfill.

Staff members from the Streets and Grounds Division continued to be very active participants in the Regional Road Maintenance Endangered Species Act Program during 2004. They are currently implementing this program in all the tasks they perform. They have a certified professional in erosion and sediment control on staff, who is also accredited by the University of Washington to instruct the Regional Road Maintenance ESA Program. Additional training for this program has begun which will address the best way to install best management practices (BMPs). In addition, during this same time period, training was initiated and completed for all Tacoma Power employees.

S7B8e Water Quality Considerations in Flood Management Projects

Capital improvement projects in 2004 included the construction of 2800 linear feet of a 48-inch storm drain trunk line in South Tacoma which replaced two 30-inch storm lines. The new trunk line was installed five feet deeper than the existing ones, creating an increase in live detention capacity in the Gravel Pit stormwater holding basin to 17 acre-feet. The Gravel Pit is located west of I-5 at South 84th Street. A new concrete headwall was also constructed as part of this project. This project will allow future excavation of the holding basin for water quality improvements.

S7B8f Run-off From Pesticide and Fertilizer Application

Staff and community volunteers participated in a "Natural Yard Day" Program sponsored by a consortium of local governments including King County, Seattle, Thurston County and Tacoma.

Personnel from various divisions of Public Works staffed several booths at Tacoma's Home and Garden Show. They answered questions for the public, many of which related to water quality concerns. Surface Water Management also distributed flyers and posters focused on things that the community could do to protect water quality such as best management practices for car washing, auto maintenance, pet waste disposal, and use of yard chemicals.

The City sponsored a lawn mower turn-in event at the recycling center at the landfill. Over 150 gas lawn mowers were recycled. The mowers that were turned in were used at the local vocational college to teach students about small engine repair. The City encourages the use of mulching mowers.

The City has a large biosolids-recycling program called TAGRO. TAGRO mix is made from extensively treated wastewater solids that are mixed with sawdust and sand. It is used extensively as a soil amendment. The City recycles 3,200 dry tons of biosolids a year. TAGRO's nutrients are released slowly, and soil conditioned with TAGRO retains water better. Plants grow very well in soils amended with TAGRO. This program benefits the community on several different levels. TAGRO is used by homeowners on their lawns and gardens. It's also used on community gardens, parks and other non-residential areas such as forests and agricultural areas. In all cases it returns nutrients to the soil. TAGRO mix is also used in a demonstration garden at the central wastewater treatment plant. This garden produces prize-winning vegetables and over 3,000 pounds of food are given to local food banks each year. The TAGRO Program debuted two new products in August 2003. They began marketing both a mulch and a potting soil. Both of the new products have been very popular and are made as part of the biosolids-recycling program.

The Streets and Grounds Division of Public Works has made significant changes in their operations. They have changed to using mulching mowers on most areas to reduce the need for insect spraying. They have continued to reduce road shoulder spraying and the use of ground sterilants. They have continued to work to reduce all types of pesticide applications. They continue to choose safer chemicals when pesticide applications are warranted. Many of their employees are licensed pesticide applicators and they have been exposed to Integrated Pest Control Management (IPM) as part of their training. They have also reassessed their expectations and values and are accepting a lower level of "visual appeal" or quality in exchange for providing more protection of the environment.

S7B8g Illicit Storm Sewer Discharge Elimination

The elimination of illegal discharges is one of the City's top stormwater priorities. The City currently has an ordinance that is used to enforce the elimination of illicit discharges. The ordinance was revised in 2002 and implemented on January 1, 2003.

The City has four staff people working towards the elimination of illicit discharges. When they do business inspections, they provide the business operators with technical assistance regarding the elimination of illicit discharges and they educate business operators about the proper BMPs to use.

The field staff observe or assist emergency response agencies with spill response activities. They provide the agencies with information on the City's stormwater system with the goal of keeping the spilled material out of the system. They responded to 73 spills in 2004. They continue to work with mobile washers and their yearly certification program and with charity car wash operators to insure that these types of washing activities are done correctly. The field staff also responds to general concerns regarding water quality problems.

During 2004, the Science & Engineering Division issued four short term Special Approved Discharge (SAD) Permits for discharges to the City's municipal storm drainage system from construction sites. Two long term SAD Permits are ongoing and are issued to EPA/DOE clean up sites. The permits were issued to insure water quality standard were met and to assess fees for use of the City's municipal storm drainage system. There were no violations of permit requirements during the year 2004.

An oil company reached an agreement with the Washington State Department of Ecology and the City of Tacoma to reroute the stormwater from its plant. It is being rerouted from a very old leaky discharge line with no manholes that goes into the Lincoln Avenue ditch and passes through a known MTCA site, to a new pipe with inspection manholes. The new line when finished will connect to the City storm line along Port of Tacoma Road and will discharge into the Blair Waterway. The work will be done in 2005.

Field staff smoke test or dye test when investigating possible improper sanitary connections to the storm drainage system. This insures that there are no improper connections to the storm drainage system, and if there are, they are corrected as soon as possible. During 2004 three houses were found to be improperly connected to the storm system and they were redirected to the sanitary sewer system.

A CCTV/locator is used to verify conditions of both storm and sanitary lines and determine direction and discharge points if plans aren't available. Occasionally the smoke and dye test results are not conclusive.

The City has a household hazardous waste disposal and recycling center located at the landfill. These facilities are open seven days a week, are free to the public and are very popular. In 2004, almost 200 tons of waste was collected at the household hazardous waste facility. A variety of different recyclables were collected at the recycling center. It provides a place for the community to safely dispose of waste products that otherwise might end up in a storm drain. In the past few years, the household hazardous waste program has added programs to collect cooking oils, mercury thermometers and fluorescent light bulbs.

S7B8h Industrial Stormwater Monitoring and Control

The City reviews all commercial plans for adequacy of the private storm sewer systems and their connection to the City's system. New construction is inspected by either the Construction or the Building and Land Use Services Divisions to ensure compliance with City requirements.

The City has a South Tacoma Groundwater Protection District that is located in the south central part of the City. The ordinance that created the district mainly addresses above and below ground storage tanks. The Tacoma-Pierce County Health Department inspects these businesses for proper chemical storage. Some

inspections are jointly conducted and information is shared. Please refer to Section S7B8b Existing Residential and Commercial Development Run-off for more information about this program.

The City's wastewater source control pretreatment staff inspects industrial sites. They also look for stormwater problems during their inspections. The industrial inspections are coordinated with Ecology staff as appropriate. This coordination includes the referral of problem sites to Ecology when the industry has an industrial NPDES Permit.

The City Solid Waste Utility staff inspects and advises businesses regarding waste disposal, waste reduction and hazardous waste management. There are several programs designed to remove toxics from the environment, including the disposal of fluorescent tube lights.

Oil has been a problem at the abandoned, 1919 era, Northern Pacific Rail Yard (now the Burlington Northern Santa Fe Yard) oil pipeline. This site is located along East D Street and affects Outfalls 243, 245, 248 and 249. Six hundred feet of the line was slip lined and we thought our interim action had stopped the release. A TV inspection found oil now entering at lateral connections. In 2004, the City rebuilt the stormwater line with a new manhole and laterals at an approximate cost of $685,000.

A backlog of drainage reports involving stormwater treatment systems was addressed in 2004. Sites are being inspected and evaluated by the Source Control staff. Our findings have been relayed not only to the engineering plan review staff and to the writers of the City's Stormwater Management Manual, but to Ecology's Technical Review Committee (TRC) and to product manufacturers as well. Staff have found a real need to increase education about the siting of these facilities in order to keep them away from heavy traffic and landscaped areas and to let the property owners know the importance of proper maintenance.

A paper titled "Preventing Sediment Recontamination in an Urban Waterway, Tacoma, Washington" was presented by one of the engineers in the Surface Water Program at the 77th Annual WEFTEC 2004 Conference on October 6, 2004. The paper focused on the City of Tacoma's Thea Foss Waterway Stormwater Source Control Strategy.

S7B8i Stormwater Education

Employee Education

The City encourages its entire Surface Water staff, as well as all other staff working in the construction and water quality related fields, to participate in continuing education. Many staff from throughout the City attended water quality-related training courses in 2004.

An in-house expert taught classes to 18 employees on the Regional Roads Maintenance Endangered Species Act (ESA) Program which includes a focus on erosion control.

The City continued to educate employees about West Nile Virus in 2004. The City coordinated closely with the Tacoma-Pierce County Health Department. Staff were again provided the opportunity to attend workshops on West Nile Virus. We did a local TV show on the virus and updated the City's response plan. We also provided

training to employees on how to respond to questions about the virus over the phone, how to report and sample dead birds and how to sample for mosquitoes.

City staff members also participate in the APWA Stormwater Managers' Meetings, the NPDES Municipal Permittees Work Group, the Puyallup River Watershed Council, the Hylebos Watershed Action Team, Ecology's Technical Review Committee, regional inspectors' meetings and the Chambers-Clover Creek Watershed Council. All of these provide opportunities for additional stormwater education.

Most of the Science and Engineering Division surface water staff and staff from other programs participated in a rain storm emergency response training session in the fall of 2004. The emergency response training allows the staff to become reacquainted with the type and location of the facilities and identified "potential trouble spots" during storms. Large rain storms require many programs and staff to respond in a coordinated effort. A new City-wide radio communication system was purchased and staff received training on the operation of the radios.

The following information lists the water quality related training courses that City staff attended in 2004. It lists the department, the division, the name of the class/workshop/conference and the number of attendees.

Public Works Department

Science and Engineering Division
Wetlands – 1
Contaminated Sediments – 1
Hazardous Materials Refresher – 3
Coastal/Estuarine Habitat Restoration Conference – 2
University of Washington Center for Water and Watershed Studies – Annual Review of Research – 1
ECO 3 , Erosion and Sediment Control Supervisor Training – 1
Regional Stormwater Inspectors' Group Meetings – 4
American Society of Civil Engineers, Sectional Meeting topics
- Low Impact Development – 1
- Foss Waterway Redevelopment – 1
- Thea Foss Waterway Revitalization Project – 1
- Goldsborough Creek Dam Removal and Stream Restoration Project – 1

Manufacturer//Supplier presentations on Stormwater Management, Inc. Stormfilter Catch Basins, Vortechnics, Inc. VortFilter, Chitosan – several staff
Western Washington Hydrology Model, version 2 training course – 1
Biofiltration and Bioretention for Stormwater Runoff Quality Enhancement – 1
Stormwater Management: Innovative Strategies – 1
Clean Water and Stormwater Conference – 1
In-house Flood Response Training – approximately 25
Remembering Statistics, A Refresher Course in Basic Statistics – 1
National Pollutant Discharge Elimination System (NPDES) Workshop – 1
2004 Water Environment Foundation Technical Exhibition and Conference – 2
Ecology Workshops on the Industrial General National Pollutant Discharge Elimination System (NPDES) Permit revisions – 2
Drinking Water Conference - 1

Volunteer Activities by Staff
Washington Department of Fish and Wildlife Steelhead and Cutthroat Policy Advisory Board
Thurston County Storm and Surface Water Advisory Board
Chairperson, Water Conservancy Board of Thurston County

Wastewater Operations and Maintenance Divisions
2004 Water Environment Foundation Technical Exhibition and Conference – 3
Pacific Northwest Clean Water Association Conferences – 7
Stormwater Pollution Prevention Plan (SWPPP) – all Operation and Maintenance employees
Water Environment School – 2
Endangered Species Act/Best Management Practices – 3

Solid Waste Division
Completion of Leadership in Energy and Environmental Design (LEED) professional exam, which covers green building practices related to stormwater management and water quality – 1
Low Impact Development through the Master Builders' Built Green Program – 1
Washington Organics Recycling Program – 1
Ecology Workshops on the Industrial General National Pollutant Discharge Elimination System (NPDES) Permit revisions - 1

Tacoma Public Utilities

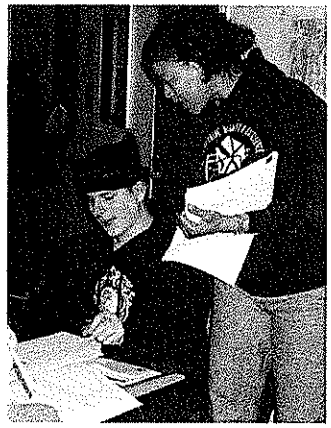
Tacoma Power, Tacoma Water and Click! Network
Track II ESA Training for Designers – 2
Association of Washington Businesses, Environmental Conference - 1

PUBLIC EDUCATION
The City runs an extensive public educational program.

Please see the information under staff education above for information about the City's West Nile Virus Program. The City's educational efforts for the West Nile Virus were focused on educating City employees about the risk of the virus and the Tacoma-Pierce County Health Department's educational efforts were focused on the general public. However, the public did benefit from the City's TV show on this topic.

The first round of the "Make a Splash" Environmental Grant Program was completed during 2004. The focus of the grant program is to fund community based projects that concentrate on and actively work towards environmental education, protection, and restoration. The program has proven to be very successful and popular with the community. The second round was implemented later in 2004 and some of those projects were completed before the end of the year. The number of grants and the dollars granted both increased during the second round. During the second round, twenty grants were awarded for a total of almost $40,000. The grants were awarded to very diverse community groups, including the Tacoma Community House, First Presbyterian Church School, the Environmental Education Association of Washington, Boys and Girls Club, Tahoma Audubon Society, the Indochinese Cultural and Service Center and others. Community members again came up with a variety of activities that were sponsored by the program. Some of them are summarized below:

- Tacoma Community House, $2,500 to teach new immigrants and refugees how to prevent pollution and to properly discard hazardous substances,
- First Presbyterian Church School, $2,233 for student field trips and a science fair,
- The Environmental Education Association of Washington, $2,500 to train teachers and environmental educators about water quality monitoring,
- Boys and Girls Club, Gonyea Branch, $2,500 for an environmental club and field activities,
- Tahoma Audubon Society, $1,500 for a Nature Mapping Workshop, and
- The Indochinese Cultural and Service Center, $2,500 to train youth to develop and implement educational material for Southeast Asian community groups.



Nature Mapping Workshop – photo by Bryan Flint

The News Tribune featured the grant program on the front page of its local section in November 2004 in an article titled "Environmental Stewardship, Making Their Splashes". The article included two pictures of one of the grant recipients who is installing rain barrels for community groups and schools. The article is included in Appendix C.

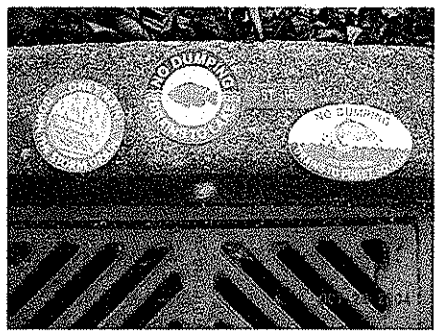
The City continues to be one of the major sponsors of the Pierce Conservation District Stream Team, a multi-jurisdictional effort. The City provides $25,000 in financial support and some supplies to the Stream Team each year. The Stream Team helps interested Tacoma community groups organize storm drain stenciling and curb marking efforts. They also offer other programs such as wetland and stream bank cleanups and revegetation, workshops, and tours for the public. The Stream Team has a water quality booth that is displayed at various community events including the Puyallup Fair. The Stream Team has a very large, active group of volunteers with approximately 500 Tacoma residents in their database. Some of their activities in 2004 included:

- Two presentations to classes at Tacoma Community College and one field trip to a stream,
- Storm drain stenciling and ivy removal at Wapato Lake and Snake Lake with University of Puget Sound students,
- Water quality training at Swan Creek for the Resource Conservation Stewards class.
- Tahoma Salt Marsh planting,
- Swan Creek brochure,

- Water quality monitoring at various creeks in Tacoma
- Provided an Urban League crew to assist with maintenance at Swan Creek, Tahoma Salt Marsh and Middle Waterway habitat restoration sites, and
- A community education and involvement program was implemented by the Stream Team in the Western Slopes area where houses are located next to or in close proximity to Crystal Creek, Crystal Springs Creek and Titlow Park Gulch Creek. We shared information with the residents about what they can do to help protect the water quality in the creeks that they live by. The report detailing this program is included in Appendix A.

The City also continues to coordinate activities with the environmental group, Citizens for a Healthy Bay (CHB). Joint activities included: $15,000 in City financial support for the BayKeeper Program, part of the National Keeper Initiative, an increase of $5,000 from past years; $2,250 in funding to support operation of an environmental hotline; storm drain stenciling; curb marker placement; native plant plantings and salvage. One of our Community Relation's staff members also serves on CHB's board of directors. CHB has a base of more than 600 volunteers in the greater Tacoma area. Partnerships with this environmental group are continuing into 2005.

During 2004, the City supplied curb marking and stenciling supplies to both Citizens for a Healthy Bay and Stream Team to pass out to groups wishing to stencil and mark storm catch basins.



Curb Marker Test Site

Surface Water Management is continuing to work with MetroParks Tacoma to support a variety of educational efforts that focus on stormwater and marine life at the Point Defiance Aquarium. 2004 was the fourth year of a five-year $100,000 grant that supports a joint educational effort. The City committed $20,000 a year for five years towards these efforts. In 2004, these monies provided staffing (April – October) and equipment for the Marine Discovery Center. The funds were also used to support several educational programs, including the Ocean Explorers Discovery Classroom for middle school kids and the Ocean Explorers Summer Camp Program for 5th and 6th graders, the Marine Biologist for a Day Program for older students and the year round Sea Snooze Program for school groups and other youth organizations such as scouts. The goal is to strengthen the connection between non-point source pollution and the health of Commencement Bay waters in the minds of the visitors. Between April and October of 2004, 79,603 people visited the Marine Discovery Center at the aquarium.

Tacoma's Resource Conservation Steward Program is a volunteer community education program designed to help spread the word about resource conservation to Tacoma residents. Volunteers receive 40-hours of free training in resource conservation, waste prevention, water quality, home composting, natural lawn care, and alternatives to household hazardous waste. In exchange, volunteers make a 40-hour commitment to share the knowledge and skills they've gained with Tacoma residents. Resource conservation stewards make an invaluable contribution to the community as they educate residents in local neighborhoods, schools and workplaces. Stewards provide useful information that helps City of Tacoma residents make informed decisions about waste prevention, the wise use of resources and ways to minimize the environmental impacts of our everyday activities. Since the program's inception in 2002, 52 volunteers have contributed over 1,200 hours of community service at 95 community events.

The EnviroChallenger Program has proven to be a very popular educational tool and now has two full time educators. This staffed, mobile, educational unit visited 41 of 50 Tacoma public schools, several private schools and various community centers, providing environmental education to K-5 children. The educational programs includes: Water Quality, Watersheds, Recycling and Waste Prevention, Household Hazardous Materials, Salmon and the Endangered Species Act, Wastewater Treatment, and Worm Composting. Pre- and post-lessons are mailed to teachers and post-visit take home activities are left following the in-class lessons.

The EnviroChallenger messages reached approximately 22,400 kids in Tacoma during the 2003-2004 school years through 974 classroom and community presentations. The City of Tacoma is very proud of this extremely successful program. Additional program accomplishments during 2004 include:

- Picked up five schools new to the program,
- Created new K-2 After the Flush lesson,
- Created new K-2 Watersheds and the Water Cycle lesson,
- Created new K-2 Water Quality lesson,
- Created new 3-5 Water Quality lesson,
- Create new EnviroKids Web site,
- Created EnviroKids rack card,
- Designed and published a new brochure,
- Remodeled all the pre- and post-visit lessons (almost 40 different activities),
- Initiated courtesy reminder calls to teachers,
- Started partnership with Citizens for a Healthy Bay for Only Rain in the Drain Pie Grant Program,
- Helped write a grant for Lister Elementary School to start worm composting and
- Staffed booths/participated at the Children's Water Festival, Maritime Fest, NatureFest and Livable Communities Fair.

Staff from the City provided public education relating to the Thea Foss Waterway clean up project. Presentations about the Foss were given to an environmental science class at the University of Washington Tacoma, to the Environmental Protection Agency's National Community Involvement Conference and to Philanthropy Northwest's Annual Conference. Information on the Foss, habitat restoration sites and general surface water education was presented to the Puyallup River Watershed Council, Rotary #8 – Preserve Planet Earth Committee, the

Working Waterfront Museum, Bellarmine High School and to the Kiwanis Club. A presentation was also made to the Public Works, Environmental Services Customer Advisory Panel. Information was also provided to the Commencement Bay Maritime Fest, the Pierce County Livable Communities Fair and the National Conference on Coastal and Estuarine Habitat Restoration Conference. A tour of the Foss was given to Ecology managers. Attendees at the Restore America's Estuaries Conference were given a tour of the Foss mitigation sites and the habitat restoration sites. A tour of the Foss project was given to a City councilmember and a training session for inspectors on the Foss project was given by staff and a City attorney that focused on environmental concerns.

Tours of portions of the City's drainage system were given to a City councilmember, two City attorneys and staff from MetroParks.

Personnel from various divisions of Public Works staffed several booths at Tacoma's Home and Garden Show. They answered questions for the public, many of which related to water quality concerns. Staff participated in a variety of other educational activities such as Channel 12-TV Tacoma appearances on a talk show program called "CityLine" and on a news magazine show called "CityScape". Staff also assisted with the Stream Team's water quality booth at the Puyallup Fair. Staff also participated with public plantings at the Tahoma Salt Marsh site and during the Foss Maritime planting. Personnel also participated in staffing a booth at NatureFest and the Maritime Fest on the Thea Foss Waterway and spent time stenciling storm drains. Solid Waste staff spent considerable time on the Northwest Natural Yard Days program and also planned for the EcoHouse, which was sited at the landfill in 2004. Surface Water Management also distributed flyers and posters focused on things that the community could do to protect water quality by using best management practices for car washing, auto maintenance, pet waste disposal, and the use of yard chemicals.

Plans also are under way for a grant-supported stormwater education program in cooperation with Citizens for a Healthy Bay, a nonprofit environmental stewardship group.

Environmental Services developed and distributes its "Envirotalk" Newsletter. The six-page newsletter, which is printed on recycled paper, includes articles relevant to the Surface Water, Wastewater and Solid Waste Utilities and is distributed to 52,000 single-family residences in Tacoma three times per year. Starting in 2005, this newsletter will be distributed four times per year.

The Clean Bay Car Wash Kits are offered to the public at no charge. These car wash kits are loaned to nonprofit groups to ensure that dirty wash water from fund-raising car washes is discharged safely to the sanitary sewer instead of the stormwater system. The City maintains six car wash kits. The kits were used 12 times in 2004 by various groups. A news release about this program was issued in April 2004, a copy of which is included in Appendix D.

Science and Engineering staff also participated in a variety of other educational type programs. Staff from the Laboratory worked with students regarding water quality at Snake Lake. Staff worked with reporters from various local media about issues related to surface water. Education of the public also took place as part of the City's formal Business Inspection Program. Two tours of the City's restoration sites were given to University of Washington Tacoma students.

The plan review team works with permit applicants on a regular basis and helps educate them about the requirements and intent of the stormwater management manual. Education about low impact development is also offered.

During 2004, Tacoma Water also provided a variety of projects and programs to help promote water education.

Tacoma Water partnered with the City of Tacoma, the Pierce County Health Department, Pierce County Environmental Services, plus many water-related agencies and the University of Puget Sound to host the 2nd Annual Tacoma/Pierce County Children's Water Festival on March 16. With the theme: "Water 4 Life" more than 750 fifth grade students learned about water quality issues, how to use water wisely and many water-related lessons.

Tacoma Water conducted two education programs during 2004: AquaQuest and the Weakest Sink; each taught lessons about water but with different methodologies. AquaQuest classes were designed to help students learn more about the operations of Tacoma Water and prepare students for a tour of the Green River Watershed. The Weakest Sink program provided a TV game-show format for students to compete to win prizes and see who knew the most about water.

Clover Park Technical College partnered with Tacoma Water to present classroom discussions about water quality, water conservation, the history of Tacoma Water and water concerns for the future. This program also concluded with a tour of the Green River Watershed.

Tacoma Water once again sponsored a water haiku writing contest for fifth graders in our service area. The winning entry:

Water is healthy.
Use water for everything.
But don't use too much.

Tacoma Water is a partner in the Water Conservation Coalition of Puget Sound (WCCPS) and a Tacoma Water staff person chairs the Youth Education Committee. Last year's major project was the reproduction of a water education activity booklet called "Shared Waters." The booklet is distributed to elementary students in the Puget Sound region including Tacoma and Pierce County. The WCCPS also sponsored a mascot "Wayne Drop" to visit Seattle Mariners games and distribute water conservation information to fans in support of a radio advertising campaign that the WCCPS sponsored.

This coalition enables Tacoma (and other WCCPS members) to quickly select from a wide array of media materials tailored specifically to Pacific Northwest residential customers. Tacoma Water continued its use of the campaign materials by purchasing 2,500 additional "Water Use It Wisely" brochures, 250 static cling stickers (placed in Tacoma Water rest rooms), 5,000 water bottles (for distribution at the Sound to Narrows footrace) and 10,000 bookmarks. The WCCPS provided regional radio advertising with basic water conservation messages. This program has been built as a "lowest common denominator" so that it will work for all utilities regardless of their need for water conservation, while allowing those that have more specific conservation goals to ramp up conservation messages as necessary and to buy packaged materials at a discount.

On July 20, Tacoma Water participated in the Drinking Water Risk Communicators Workshop in Kent, Washington. This event was hosted by the Washington State Department of Health and focused on drinking water emergencies in Snohomish, King and Pierce Counties. Discussion centered on public education programs and communication infrastructure.

Tacoma Water was a partner with the Tacoma Rainiers Triple A baseball program for their summer Kids Club. More than 500 kids received souvenir items, discount tickets, water conservation information plus a free barbeque lunch for their families as club member benefits.

In support of the first ever Native Plant Appreciation Week, Tacoma Water produced and distributed 5,000 native plants posters along with over 1,500 books on native plants to customers and Master Gardeners responding to an offering in their utility bill insert. The Native Plant Appreciation Week Program, which was created by the Washington Native Plant Society, was further supported by proclamations signed by both Governor Gary Locke and City of Tacoma Mayor Bill Baarsma. The posters were created with the voluntary support of a local graphic designer who utilized copy-right-free photos. It featured 30 native plants, three tips regarding the benefits of native plants, and a promotion of the Point Defiance Native Plant garden, where citizens may go to learn how these plants look and grow. Posters obtained additional distribution support via the Tacoma Metropolitan Parks and the Tahoma Audubon Society. The 80+ page book, titled "Grow Your Own Native Landscape" was purchased from WSU at a bulk discount rate of $4.40 each. Both items were a significant draw to customers, who in previous years have sought out fewer than 50 to 100 of the items offered in the utility bill insert.

Tacoma Water reprinted the "Leak Detection and Prevention" tip sheets (5,000) since the prior printing of 1,000 was already diminished.

The Water Quality Section of Tacoma Water working with the Tacoma-Pierce County Health Department, conducted focus groups and developed an important piece of public education around wellhead protection in the area around our South Tacoma groundwater resources.

The Water Quality Section, in conjunction with other local water purveyors, developed and staffed an education booth at the Puyallup Fair.

Information and product offerings remained available to Tacoma Water customers via the conservation page, which is an element of the Tacoma Public Utilities web site. All utility customers otherwise received spot water conservation tips via their utilities bill in the months of April and May. Staff also continues to provide conservation information to organizations and individuals soliciting it. Presentations provide an opportunity to distribute rain sensors, and indoor/outdoor literature to attendees. Mailings offer tailored responses and include all of the same materials listed, plus information regarding indoor information. Presentations were made to approximately 345 people in three different groups, and mailings accommodated approximately 26 additional customers over the year.

A City of Tacoma TV-12 Public Service Announcement was run in April featuring the Conservation Specialist promoting the *NW Natural Yard Days* Program.

S12 Thea Foss Waterway Basin Program

The City's NPDES Municipal Stormwater Permit, issued in 1995, contained a special provision requiring the development of a stormwater program specific to the Thea Foss Waterway. Much of the work to establish the program was done in 1995 and early 1996, prior to this reporting period.

Source control activities conducted within the Thea Foss Waterway Basin during 2004 are documented in the Quarterly Source Control Reports submitted to Ecology and EPA. In 2004, source control efforts within the Thea Foss Waterway Sub-watershed continued to focus on outstanding issues and concerns. A detailed list of ongoing issues and concerns has been compiled by the Stormwater Source Control Workgroup, consisting of representatives from the City of Tacoma, the Department of Ecology (Ecology), the U.S. Environmental Protection Agency (EPA), the Thea Foss Participants' Group, the University of Washington - Tacoma and Citizens for a Healthy Bay. The work group meets semi-annually to cooperatively discuss and provide status updates on each action item.

A Derrick on the Foss Waterway

(This award winning photo by Rick Fuller, Source Control Representative, was featured in American City & County, February 2005 issue)

Stormwater Workplan Addendum

Under a Unilateral Administrative Order dated September 30, 2002, and a Consent Decree with the Environmental Protection Agency (EPA) Dated May 9, 2003, the City of Tacoma (City) is currently engaged in remediation of marine sediments in the Thea Foss and Wheeler-Osgood Waterways in Tacoma, Washington. Following the cleanup action, it will be necessary to continue monitoring and source control activities to ensure sediment quality is protected in dredged and capped areas. As part of the Consent Decree Statement of Work, a letter addendum dated November 1, 2001, (i.e., Attachment 1) provides a detailed schedule and work plan for City of Tacoma's stormwater source control efforts for Thea Foss and Wheeler-Osgood Waterways (Thea Foss Post-Remediation Source Control Strategy). This was a major staff focus. The City of Tacoma is the first municipality to do this type of work, and is breaking new ground while serving as a model for other Superfund sites.

This Stormwater Work Plan Addendum included a description of stormwater monitoring efforts, studies, source control efforts and BMP assessments for municipal stormwater sources. Based upon these various efforts and evaluations, an approach for future stormwater source control decision-making is also provided in the work plan. A schedule for these activities is also included. Specific activities outlined in the document and their current status are as follows:

1. Phthalate Source Study for Thea Foss and Wheeler-Osgood Waterways – The City of Tacoma is gathering information on phthalates within our community, specifically the magnitude of its presence in the environment, where it is found in the city, and its source(s). This phthalate source study is comprised of two phases, Phase I and Phase II.

Phase I of this study was to evaluate business types/land uses versus BEP levels found in area catch basin (CB) sediment. Two samples were taken at each of a number of selected locations: One from an on-site CB and the other from a CB in the right of way nearest the site. CB locations with elevated phthalate concentrations appear to be linked to tire wear, cars, and high traffic businesses and areas. The higher incidence of phthalates is associated with the rights-of-way (ROWs) in the Commercial/Industrial Land use areas, in particular fast food ROWs and automobile ROWs. Most of these sources appear to be ubiquitous and associated with general urbanization.

The Phthalate Source Study Phase II looked at specific products. The City of Tacoma, Seattle Public Utilities (SPU), and King County Department of Natural Resources outlined a participation plan for the Phase II sampling in an effort to increase the robustness of the study. The City of Tacoma Laboratory completed the analysis on the solid matrixes and Metro/King County Laboratory completed the analysis on the liquid matrixes.

In addition, the City analyzed roof wipe samples collected before and after cleaning the Tacoma Dome roof. These samples indicated that a large majority of the BEP in the sample collected before cleaning was attributed to atmospheric deposition rather than the underlying roofing material.

Automotive sources of BEP should also be considered given that two of the three used motor oil samples contained significant concentrations of BEP, but none of the unused/new oil samples contained BEP above analytical detection limits. King County's literature review also suggests that some fuel products, such as diesel, contain BEP that may be released into the atmosphere in the exhaust (King County and SPU 2004). This theory is supported by results from sampling of the Tacoma Dome roof. The next step is to continue to partner with King County and SPU to test for the presence of phthalates in the air.

2. Total and Dissolved Constituents in Stormwater for Thea Foss and Wheeler-Osgood Waterways (pending).

3. WSDOT/UW and other Stormwater Technology Studies - In 2003, several storm samples were collected on one treatment technology at the WSDOT Ship Canal facility. On September 9, 2003, the City received and City Council accepted a $500,000 grant from the Federal Highway Administration, 2003 Transportation Community and System Preservation Pilot (TCSP) Program for the Thea Foss Waterway Stormwater Study. The City is using a portion of the grant to continue the study and evaluation of the effectiveness of various treatment methodologies for stormwater from road and highways using the Ship Canal Test facility. The remainder of the grant will be used to study stormwater projects in Tacoma.

In July 2004, stormwater sampling was continued with testing on two treatment technologies at the Seattle Ship Canal Test Facility, the StormFilter and AquaSheild-AquaFilter. On the first facility, a total of nine storm events have been sampled. Sampling will continue until a total of 15 events have been sampled. It is anticipated that

sampling will be completed in the summer of 2005 and the report will be completed in the fall of 2005.

The second technology unit was updated and will be sampled in 2005. It is anticipated that sampling and reporting on this unit will be completed in 2006.

Following the completion of each technology's testing period, the City will evaluate the technology's effectiveness and applicability and reasonableness for use of this technology within the Thea Foss Watershed. Reasonableness shall take into consideration effectiveness, maintenance requirements, flood control and cost in comparison to the effectiveness achieved to date in the Thea Foss Watershed as a result of the current source control program.

4. Source Control Program - Quarterly and Annual Source Control Summary Reports are submitted to EPA and Ecology under this program. The 2003-2004 Source Control Report was submitted to EPA in March 2005 and it included an updated Source Control Workplan. The conclusions and recommended actions from the report are listed in Section 7, Identification of Known Water Quality Improvements or Degradation.

5. NPDES Stormwater Monitoring for Thea Foss and Wheeler-Osgood Waterways - The NPDES Stormwater Monitoring for Thea Foss and Wheeler-Osgood Waterways is conducted under an Administrative Water Quality Order No. DE 01WQHQ-3241 issued by the Washington State Department of Ecology on September 13, 2002, and amended August 11, 2004.

Water Quality Order for NPDES Stormwater Monitoring
Since August 2001, the City has been conducting the NPDES Stormwater Monitoring Sampling and Analysis Program. Under the program, seven outfalls discharging to the waterway are to be monitored for five years. Ten storm samples and four base flow samples are to be collected at each outfall per year. In addition, sediment trap samples at each of the outfalls are to be collected every fall/winter of each year. Upstream samples are also taken to help identify hot spots and sources. The resulting data was summarized and evaluated in the Stormwater Monitoring August 2001-2004 Report. The report was submitted to EPA and Ecology in December 2004. This type of monitoring is very labor intensive and a lot of staff time has been spent in this area.

INSPECTIONS
In 2004, stormwater specific inspections were conducted at businesses within the Thea Foss Sub-watershed and other watersheds. About 85% of these inspections were focused in the Thea Foss Watershed. Most of the inspections were performed to evaluate compliance status at businesses where concerns were previously noted.

Inspections of ponds and municipal stormwater facilities were also started. The very detailed Source Control Quarterly Reports contain summaries of the Foss Basin inspection activities and are available for review.

Several City-owned facilities located in the Thea Foss Sub-watershed were inspected during 2004. The facilities included the Asphalt Plant, as well as other Streets and Grounds operations, the Tacoma Dome and the Sign Shop. Time was also spent at the new Police Facility, which is under construction, regarding erosion issues. The inspections were performed in the same fashion as those of private business/industry. Refer to Section S7B8b Existing Residential and Commercial Development Run-off for more information about the inspection of City-owned facilities.

EDUCATION

The City continues to provide residents and businesses with educational handouts and pamphlets pertaining to BMPs and the Thea Foss Waterway cleanup. Residential letters and pamphlets are distributed in neighborhoods following complaint investigations. During inspections, businesses are provided both general and specific BMPs targeting applicable activities. Staff participated in the Fest (formerly Maritime Fest), a festival held on and next to the Thea Foss Waterway.

In 2003, Citizens for a Healthy Bay (CHB) and Environmental Services (ES) applied for and received a PIE grant from the Puget Sound Water Quality Action Team to conduct a pilot research and education program on stormwater pollution. The program was started in 2004 and will be completed in 2005. The program, called "Only Rain in the Drain", is centered on automotive washing and maintenance and will reach more than 5,500 residents living in the downtown Tacoma area drained by stormwater Outfall 230. The area drained by stormwater Outfall 235 will serve as a control.

The goals of this project are to (1) increase general awareness among targeted residents about stormwater pollution; (2) increase residents' aspirations to adopt automotive maintenance behaviors that reduce stormwater pollution; (3) improve actual automotive maintenance behaviors to reduce stormwater pollution; and (4) measure a resulting decrease in actual stormwater contaminants.

Please refer to Appendix E for an example of an educational brochure used in the Thea Foss cleanup. There is also educational information on a web site at www.cityoftacoma.org/fosscleanup.

COMMERCIAL AND INDUSTRIAL MONITORING

A variety of activities were completed with respect to the monitoring of commercial and industrial sites.

Oil has been a problem at the abandoned, 1919 era, Northern Pacific Rail Yard (now the Burlington Northern Santa Fe Yard) oil pipeline. This site is located along East D Street and affects Outfalls 243, 245, 248 and 249. Oil/tar reappeared at the MH-394 pom poms (oil snares) after seven months of no oil. We thought our interim action (slip lining) had stopped the release but a TV inspection at low tide found oil now entering at lateral connections. A new intensive effort of investigation and remediation was completed. In 2004, the City rebuilt the stormwater line with a new manhole and laterals costing in excess of a half million dollars.

During this work, an additional underground tank was found at a local business and may also relate to this release. On January 31, 2005, Ecology sent Enforcement Order Number 1915 for the BNSF Oil Pipeline Site to several businesses, WSDOT and the City of Tacoma. In 2005, Ecology and the parties mentioned will coordinate in the implementation of the order.

MAJOR CONSTRUCTION PROJECTS

Many of Tacoma's recent and very large construction projects have taken place in the Thea Foss Watershed and required a great deal of work and coordination from the Surface Water Management staff. These big projects include LINK, the light rail system, the Convention Center, Albers Mill, condominiums, the esplanade along the waterway,

facilities for Sound Transit, the Tacoma Art Museum and the ongoing expansion of both the University of Washington - Tacoma campus and the Port of Tacoma.

A Derrick on the Foss Waterway

Major environmental cleanup of the Thea Foss and Wheeler-Osgood Waterways is under way. The City of Tacoma is nearing the end of the third year of the planned four year project involving remediation of the contaminated sediments in these waterways. When the project is completed in early 2006, the City will have dredged about 525,000 cubic yards of contaminated sediments - enough to fill more than 38 Museum of Glass cones -- from the waterways and placed them in a confined disposal facility in the St. Paul Waterway. As part of the cleanup plan, the City is also building a new marina and marine habitat areas. As of December 2004, the City of Tacoma had accomplished the following:

- Completed construction of a new marina on the west side of the Thea Foss Waterway in front of Albers Mill, the Museum of Glass, and Thea's Landing condominium and apartment building. This marina will be used during construction to temporarily house boats moored at other marinas as those marinas are dismantled to allow for remediation. Following construction in these areas, the existing marinas are reconstructed. The new marina will remain in the waterway as a permanent enhancement after the project is completed.
- Deepened the St. Paul Waterway to increase its capacity in order to build a disposal facility to confine contaminated sediments dredged from the Thea Foss and Wheeler-Osgood Waterways.
- Placed the clean sediments, excavated from the St. Paul Waterway during deepening, on the Puyallup River Delta to enhance marine habitat.
- Continued dredging contaminated sediments from the southern end of the Thea Foss Waterway and the Wheeler-Osgood Waterway, and placed capping materials on the shoreline and channel areas.
- Constructed sheet pile walls in some areas to replace existing walls and to support dredging activities.

The "Utilities" group, which is not part of the City of Tacoma, completed their in-water work at the head of the Foss Waterway. EPA is using the Corps of Engineers to inspect the work done by both the Utilities group and the City. Waterway pollution events/responses have been coordinated with their contractors. A good working relationship has developed. The City's contractor continued to assist occasionally in spill response actions related to the storm drain outfalls.

Sediment Contamination Incident
Under separate Consent Decrees with EPA, the City and a group of private utilities are performing sediment remedial actions in the Thea Foss Waterway. In February 2004, the Utilities completed the remediation of the southernmost 1,000 feet of the waterway. Limited amounts of dredging were completed, and the area was capped with clean materials. In August, prior to the City dredging in the area immediately north of the Utilities' work area, pre-dredge samples were taken on the Utilities' cap. Three weeks later, after dredging activities were completed, post-dredge samples were taken. The post-dredge samples showed elevated concentrations of several contaminants.

In response to these elevated concentrations, the City worked with EPA, the Utilities, and CHB on a plan to determine the cause of the contamination. Three potential sources were identified:

- Dredging/construction residuals
- Stormwater
- Utility cap failure

Additional sampling, analysis, and evaluation of each of these three potential sources was performed. For the storm drains, this included review of sampling information, rainfall records, spills reports, etc. In addition, a mass balance analysis was completed. These analyses concluded, and all parties agreed, that stormwater was not the source of the contamination on the Utilities' cap. Even though the City's contractor was following the best management practices established for the project, dredging/construction residuals were determined to be the primary cause of the problem. Additional best management practices and modifications to the construction sequence were implemented to reduce the possibility of a reoccurrence.

Coordination
The City's contractor working on the sediment remediation project has been cooperative and responsive in assisting the City with spill response during the course of the year. In response to several spill incidents upstream of their work, the contractor has provided assistance with placement and maintenance of booms and timely reporting of incidents that they have observed while working on the water

SPILLS
No significant spills reached the Thea Foss Waterway during 2004, although City staff responded to a large number of spill and pollution complaints. Spill and pollution reports are properly reported to the appropriate agency and compiled in the quarterly progress reports. Please refer to Section S7B8b Existing Residential and Commercial Development Run-off for more information on spills and other pollution complaints.

The City contracted with an environmental group, Citizens for a Healthy Bay (CHB), for environmental hotline services. CHB's hotline number (253-383-2429) was operational throughout 2004. Fifty-two calls were received in 2004. As in previous years, most of the calls were related to petroleum products, soap/detergent/foam and paint.

Complaints, Spills and Business Inspections
January 2002 to December 2004

	2002	2003	2004
# of Complaints	195	275	266
Follow-up	88	166	135
# of Spills	48	38	73
Follow-up	40	30	37
# of Inspections – Planned	106	322	208
# of Inspections – Unplanned	106	28	55
Follow-up	93	114	55
Grand Total	**676**	**973**	**829**

The largest classes of complaints received in 2004 involved petroleum products (140), sewage (60), mud, silt or muddy water (48), and water (flooding/standing/drainage) (43).

2. Notification of Any Recent or Proposed Annexations or Incorporations

No annexations or incorporations took place in 2004.

3. Differences Between Planned and Actual Expenses

Relating the planned expenditures in each of the above categories to the actual expenditures was still very difficult in 2004. The City's budget and fiscal tracking systems are not structured to fit the NPDES needs. They were developed to comply with the state auditor requirements and conform to the Government Accounting Procedures (GAP). Some activities are budgeted in one activity or organization but are actually spent and therefore charged to a different activity or organization. As a result, the actual expenditure in any one line item does not necessary relate to the budget number for that same category. Finally, some capital expenditures may be budgeted in the operating budget but the expenditure is taken from the capital budget and vice versa.

The City is continuing to develop its new accounting software in its Business Improvement System computer system. The system will allow the City to better manage budgets. The system went live in late 2003, but it is still undergoing development. The system should be fully functional for the year 2005 report.

4. Revisions, if Necessary, to the Remaining Years of the Fiscal Analysis Reported in the Approved Stormwater Management Program

Revisions to the fiscal analysis section are not necessary.

5. For the Fourth Year Report, a Summary and Analysis of the Cumulative Monitoring Data Collected Throughout the Term of the Permit

The fourth year report was submitted in September 1999.

6. A Summary Describing Compliance Activities, Including the Nature and Number of Official Enforcement Actions, Inspections and Types of Public Education Activities

The Building and Land Use Services Division of Public Works is responsible for the permitting of a wide variety of land use activities throughout the City. They issue

residential and commercial building permits, clearing and grading permits, and permits for shorelines, wetlands and other critical areas. They also process all land use permit applications including short plats, formal plats and other activities. During 2004, the following actions were taken:

Permits, inspections and enforcement actions

	2003	2004
Erosion control inspections	1522	2915
Grading and filling permits	47	44
BMP failure inspections	58	165
Tracking sediment off-site	45	61
Grading inspections	40	*
Wetland permits	12	36
Wetland inspections	82	110
Wetland enforcement actions	9	14

* Combined with erosion inspections for 2004

The Building and Land Use Services Division of Public Works employed a consulting firm in 2004 to perform wetland inspection and permit analysis beginning in September in order to allow the permanent wetland specialist the time to work on the rewrite of the Critical Areas Ordinance. The wetland totals above are the combined effort of both the consultants and the permanent staff person.

Wetland enforcement actions were counted for those actions that were a complaint, or violation of conditional approvals. Although all monitoring, maintenance and follow-up on conditions could be considered a type of enforcement, these enforcement actions do not include permit condition enforcement such as "notice on title" documentation, storm plan review, site visits to verify installation and monitoring plans, etc. However, failure to comply with conditions is included in the violations noted above. Site visits for these enforcement actions would be reflected in the wetland inspection count.

The Science and Engineering Division staff continued to use a new tracking system in 2004. All complaint calls and spills as well as claims, business inspections, sanitary sewer overflows and emergency flooding calls are now tracked. Please refer to Section S7B8b Existing Residential and Commercial Run-off for more information on this tracking system and the number of complaints received. The water quality types of complaints that were addressed included concerns such as vehicle storage, residents working on their vehicles at home, washing of buildings, carpet cleaners, paint waste/wash-up, spills relating to vehicular accidents, business practices related to improper storage of chemicals, and vehicle and equipment washing. For the most part, these types of complaints were taken care of through education of the citizens involved. If appropriate, field compliance letters and formal certified letters were sent.

The Surface Water staff also responds to erosion and sediment control complaints. Problems ranged from lack of, or improperly installed silt fencing, to tracking of sediments onto City rights-of-way. There were also problems in 2004 associated with discharging turbid water into the stormwater system via direct connections and/or physically pumping water from an ornamental fountain or a low spot to a catch basin or a manhole.

Citizens for a Healthy Bay, a local environmental group, operate a pollution hotline in cooperation with the City. The hotline received 52 calls in 2004 from the public,

agencies and agency volunteers. The pollutants most frequently reported were petroleum products, paint and soap/detergent/foam.

Staff from the Washington State Department of Ecology also responded to many water quality complaints and concerns within the City during 2004 and coordinates closely with City staff. Often, these cases are referred to City staff for inspection. Some of these sites may have been located in unincorporated areas outside of the City limits of Tacoma, but were tracked as having a Tacoma address. Ecology staff provided the following numbers:

Ecology response to complaints and spills

	2003	2004
Spills to water	141	126
City referrals	68	61
Water quality referrals	50	41
Drug labs	139	*
Spill calls except drug labs	181	*

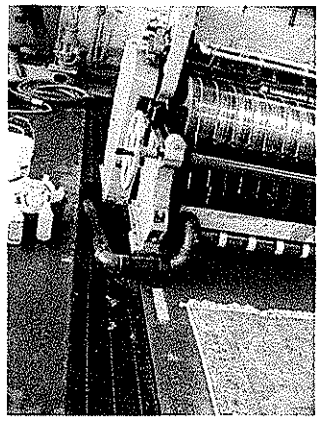
* Ecology recommended to discontinue including these calls in this report

7. Identification of Known Water Quality Improvements or Degradation

Charitable groups that sponsored car washes utilized the City's Clean Bay Car Wash Program. The use of the car wash kits prevented a lot of dirty, soapy water from entering our stormwater system. The City has several kits available to the community at no charge. Kits were loaned out twelve times in 2004 to various groups. Community groups were also educated through this program about the importance of proper waste management and about how to help keep our water clean. Please refer to Appendix D for a press release related to this topic.

Two decorative public water fountains in the downtown area were disconnected from the surface water system and connected to the sanitary sewer system. When the fountains are cleaned, this rerouting allows the dirty water to be drained to the sewer system instead of requiring it to be vactored out or allowing it to flow into the Foss Waterway.

A local carpet/upholstery cleaning company that has been in business in Tacoma for many years was discovered to have a misplumbed connection. This resulted in process wastewater being discharged to the Thea Foss Waterway, via Outfall 237B, for over 50 years. When the situation was discovered through a routine camera examination by a Transmission Crew, it was referred to Source Control Representatives from both the storm and sanitary programs. These representatives worked with the business to resolve the problem. The business discontinued the discharge immediately; however several employees' jobs were potentially at risk. The Source Control Representatives worked with the business operator and suggested a practical solution. The solution included a temporary fix until a permanent connection to the sanitary sewer could be budgeted and scheduled. This solution solved the problem and ensured that none of the employees would be laid off or would lose their jobs. Today their process wastewater appropriately discharges to the sanitary sewer.



Carpet Cleaning Operation

The Tahoma Salt Marsh Restoration Project was completed in March 2004 through the Natural Resource Damage Assessment (NRDA) Program. This project took a vacant piece of shoreline along Ruston Way and through excavation and regrading; both riparian and intertidal habitat was created. The shoreline was also enhanced to make it more fish-friendly. Almost 1,000 cubic yards of contaminated soil was removed and properly disposed off site. The project was completed after volunteers planted vegetation on the 2 acre site. Please refer to Appendix F for additional information about this and other NRDA habitat restoration projects.

In accordance with the Foss Maritime Access Agreement, the City created a small earthen berm at the end of East F Street near the shoreline of Commencement Bay. This enhancement involved creation of the berm, placement of native plants, and installation of goose exclusion devices and an irrigation system. Volunteers planted and mulched the site in October 2004.

The Transmission and Maintenance staff found two side sewers that were connected to the stormwater system. These connections were eliminated and the systems were connected to the sanitary sewer.

Staff is working with the Washington State Department of Transportation (WSDOT) on several improvements to State Route (SR) 16. Construction is expected to start in 2005 and continue through 2006. Within the Leach Creek drainage area, future habitat conservation and wetland mitigation is part of the mitigation package conditioned within the wetland permit requirements. Negotiations and wetland mitigation requirements also resulted in a retrofit of the inlet to Snake Lake. This lake is located within the Tacoma Nature Center, a major park and environmental education center, and is part of the Flett Creek drainage area. A treatment device will be added to the inlet. Treated flows will be equivalent to the six-month event, and will encompass 415 acres, which accounts for all of the drainage entering Snake Lake from the north. The WSDOT will be required to monitor the proposed treatment device for three years after installation, sharing split samples with Tacoma. Data collected will be used to further aid the Washington Department of Ecology sponsored Emerging Technologies Technical Review Committee's evaluation of treatment BMPs.

Stormwater Quality in Thea Foss Waterway Basin.

Two decades of stormwater and stormwater sediment monitoring has shown success in the City of Tacoma's source control program for Thea Foss Waterway. Stormwater loads based on 2001-2004 stormwater monitoring data indicate a 40-80 percent

Same as Exec Summary from Source GI Report.

reduction compared to monitoring data collected in the late 1980s through the 1990s. More recently, baseflow and stormwater quality have improved or remained the same for the past three years under the City's NPDES monitoring program. All the indicator PAHs (phenanthrene, pyrene, and indeno(1,2,3-c,d)pyrene) show evidence of significant reductions in stormwater concentrations at Outfall 230. The City has directed numerous source control efforts in this basin. The cumulative effects of these efforts has likely caused the observed improvement in stormwater quality.

The improvements in stormwater quality indicate that source control efforts in Thea Foss Basin were effective in the reduction of chemical concentrations in stormwater. Source control activities currently being implemented by the City include business inspections, response to spills and illicit discharges, street cleaning and catch basin cleaning operations, pollutant source tracing, and implementing the City's Surface Water Management Manual through our stormwater ordinance. The ordinance requires stormwater control systems on new and redeveloped sites and provides a mechanism for enforcement of stormwater concerns.

Specific chemicals of concern for the Thea Foss Basin are mercury, PAHs, phthalates, pesticides/PCBs and TPH.

- **Mercury.** Mercury was detected in stormwater at Outfalls 230 and 235. The highest concentrations of mercury were detected in stormwater sediments in Basins 243 and 230. The City will evaluate additional upline stormwater sediment data to trace the source(s) of mercury.

- **PAHs**. Since 2001, there have been several ongoing investigations for PAHs in Basins 254, 245 and 237A including:
  - Upline source tracing – sediment trap (Outfalls 237A, 237B, and 230).
  - MH390/Outfall 245 black oil/tar releases: Northern Pacific Rail Yard oil pipeline, Tacoma Fixtures or other sources (Ecology lead).
  - Tacoma Light Rail Construction – old gas lines (Outfall 230).
  - Outfall 237A – Tacoma Coal Gas site DA-I line (Ecology lead).
  - Conducted business inspections in Basin 254.

  For each of these investigations, an approach has been developed that includes participation by both the City and Ecology. The City will continue to support these investigations and work with Ecology to eliminate known source(s) of PAHs.

  Pyrene and indeno(1,2,3-c,d)pyrene concentrations were found to be significantly higher in stormwater at Outfalls 254 and 230, respectively. These results suggest source control activities are best focused in Basins 254 and 230 for PAHs. The PAH concentrations in the sediment traps were highest in Basin 230 followed by Basins 237A and 237B. The City will evaluate additional upline stormwater sediment data to trace the source(s) of PAHs in Basin 230.

  All the indicator PAHs (phenanthrene, pyrene, and indeno(1,2,3-c,d)pyrene) show evidence of significant reductions in stormwater at Outfall 230. The City has directed numerous source control efforts in this basin, including control of potential PAH sources. The cumulative effects of these efforts has likely caused the observed improvement in stormwater quality.

- **Phthalates.** Current ongoing investigations for phthalates include:
  - Basin 245 – former MPS site (Ecology lead).
  - Upline source tracing – sediment trap (Outfalls 237A, 237B, and 230).
  - Phthalate Study – Phase I and II.

  In whole-water samples, the highest concentrations of bis(2-ethylhexyl)phthalate were found in Outfalls 230 and 235. Concentrations in stormwater at Outfall 235 were significantly above other outfalls in the basin. In stormwater sediments, the highest concentrations of bis(2-ethylhexyl)phthalate were found in Outfalls 230, 243 and 245. The City will evaluate additional upline stormwater sediment data to trace the source(s) of phthalates in Basins 230 and 245. Also, the City will focus source control activities in Basin 235 for bis(2-ethylhexyl)phthalate. Additional monitoring data will determine if Basin 235 is significantly above other outfalls in the basin.

- **Pesticides and PCBs**. Pesticides and PCBs are not detected at the detection limits for whole-water. The highest concentrations of DDT and PCBs were found in stormwater sediments in Basin 230. The City will evaluate additional upline stormwater sediment data to trace the source(s) of PCBs and pesticides in Basin 230. The City will conduct an investigation with Tacoma Public Utilities to locate utility vaults in this area, which may be a potential source of PCBs.

With continued monitoring and evaluation of source controls, the City believes further improvements in stormwater quality will be realized. Source controls implemented in 2004 include the following:

- Removal of the coal tar seepage from DA1-line in Outfall 237A.
- Remediating the source(s) of the "oil-snakes" to storm drain line to Outfall 245 and replacing the storm drain with a sealed line thus removing the "oil-snakes" conduit.
- Mapping the Burlington Santa Fe Rail Yard and the outfalls to the Foss.
- Business inspections/public education/complaints and spill responses.

The City recommends the following source control activities for 2005 and beyond:

Priority 1 tasks are:

- Outfall 237A PAHs in the area draining to sampling locations FD13 and FD13A.
- Outfall 237B PAHs in the area draining to sampling area FD31, which is a small area.
- Outfall 235 install sediment traps upline before seasonal first flush.
- Outfall 230 mercury and PCBs/DDT source tracing in Branch FD-3A.
- Outfalls 245 and 248 BEP investigation with Ecology.
- Outfall 245 monitoring for "oil snakes" downstream of the slip line on South 19th Street.
- Outfall 245 East "D" Street and E. 19th investigation by Ecology.

Other Priority 1 tasks that are currently part of our ongoing programs include:

- Review of the 2004-2005 stormwater sediment data in summer 2005 to confirm existing conditions in the basin.
- Implementing the City's Surface Water Management Manual.
- Inspect 300 businesses per year in Tacoma and document the inspections using the new business inspections database (completion date is December 2005 for database).

- Respond and track all complaints/spills in complaints database.
- Continue NPDES Stormwater Monitoring Year 4.
- Continue phthalate source investigations.
- Continue participation in the WSDOT/UW Stormwater Technology Study.
- Continue participation in Ecology's Technical Review Committee for Stormwater Treatment Technologies.

Priority 2 tasks are:

- Outfall 243 mercury source tracing.
- Begin Outfall 254 PAHs source tracing including business inspections.

Priority 3 tasks are:

- Outfall 237A PAHs in the area draining to sampling location FD10.
- Outfall 237A phthalates in the area draining to FD10C.
- Outfall 237A mercury and PCBs in the area draining to FD2A.
- Outfall 237B phthalates source tracing in area draining to FD36 and FD38, which consists mainly of fast food restaurants and small strip malls.
- Outfall 237B upline sediment trap data analysis.
- Outfall 243 phthalate source tracing investigations if needed.
- Outfall 235 continues support of Ecology lead investigations.
- Outfall 243 review of railroad yard and SR 509 drainage systems.
- Hiring one source control specialist in 2005.

Priority 1 tasks will be initiated in spring 2005, followed by Priority 2 and Priority 3. Completion of each task is dependent on what is found during the investigations. Updates of schedules and tasks will be reported in the Quarterly Source Control Reports.

Conclusion. The information presented in this report indicates that additional source controls such as structural BMPs may not be necessary to protect waterway sediments as long as water quality does not degrade. The City will continue to show our commitment to controlling sources to stormwater

Please refer to the Foss Waterway Source Control Quarterly Reports described under Section S12 Thea Foss Waterway Basin Program for additional information about water quality improvements.

8. Status of Watershed-wide Coordination and Activities which the Permittee has Undertaken Individually or Jointly as Part of the Special Condition S7B7.

Please refer to Section S7B7 for information on watershed-wide coordination and activities.

Th

APPENDIX A

Titlow-Western Slopes Public Education and Outreach Project Description and Evaluation

Crystal Creek, Crystal Springs Creek, Titlow Park Gulch

Completed for: Tacoma Public Works Department of Environmental Services
Science and Engineering Division

Prepared by: Pierce Conservation District Stream Team

December 2004

Project Description

The Titlow-Western Slopes Education and Outreach Project was undertaken December 2004 in an attempt to educate residents of the Western Slopes community on the impacts that they have as individuals and as a neighborhood, on the three creeks that run through their watershed. Crystal Creek, Crystal Springs Creek, and Titlow Park Gulch are three waterways which originate near the top of the Western Slopes bluff and flow through residential areas west of Sunset Drive and bordered by 6th Avenue on the north and S. 21st on the south, before emptying directly into Puget Sound. Although small waterways, these spring-fed streams run year-round and have been affected by physical and chemical alterations over the years.

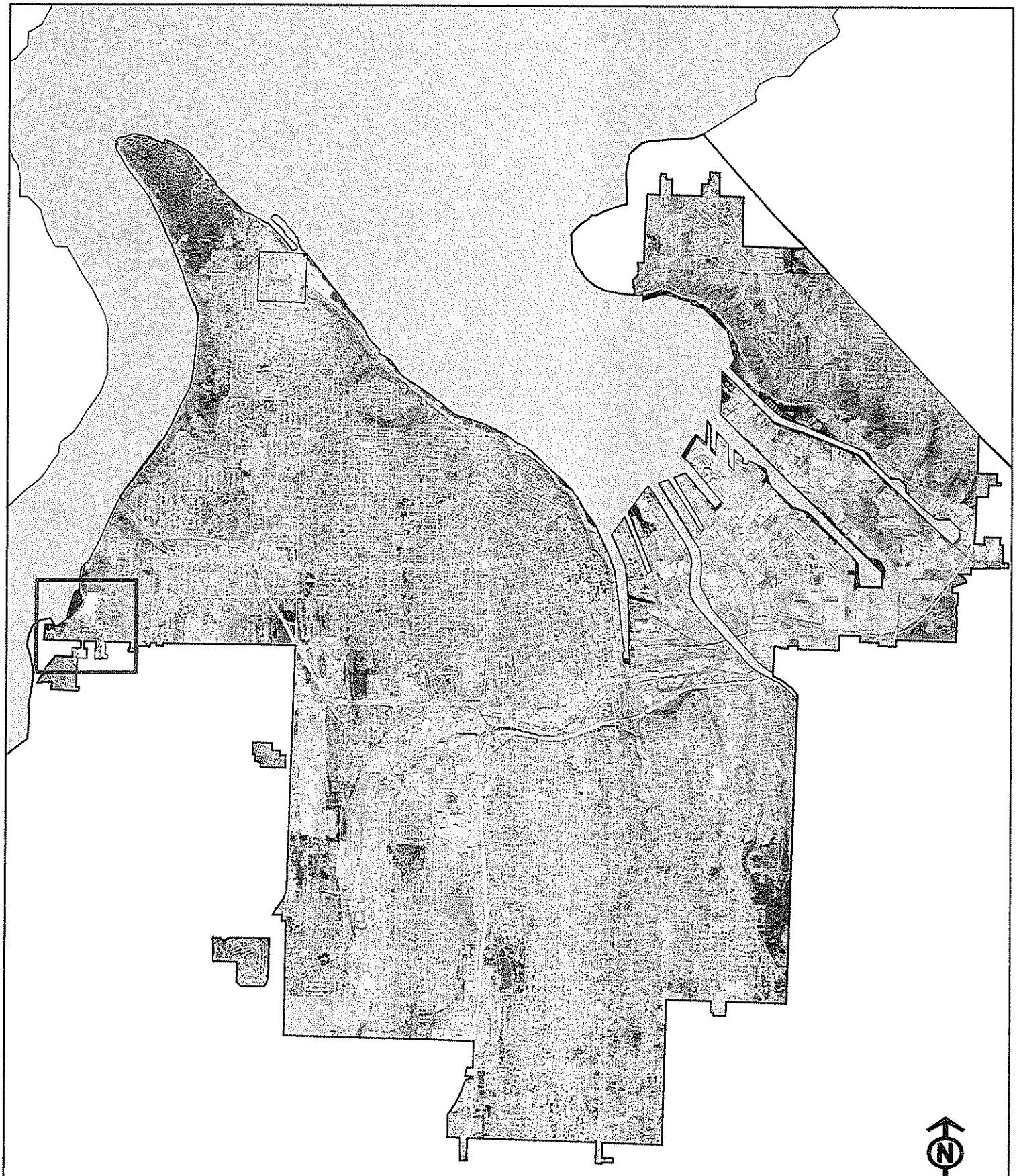
Personal visits to all 56 City of Tacoma households whose properties directly affect one of these three creeks was attempted to discuss the importance of the creeks and the impacts that each homeowner has on them. Information on good homeowner practices regarding lawn and garden care, using car washing facilities, checking for vehicle leaks, and picking up pet waste; using a fish-friendly soil amendment such as TAGRO (made by the City of Tacoma from heated biosolids); and promoting neighborhood-wide carwashes using the City of Tacoma's Clean Bay Car Washing Kits were distributed to encourage utilization of the methods discussed.

Prior to the personal visits, postcards were mailed to all residents to inform them of the dates and purpose of the visit. Doorhangers were made and left at the homes of residents who were not home on the first visit, to remind them of the purpose and also of the date of the second site visit. Homeowner educational handouts were created describing good land use practices on the topics of lawn and garden care, car washing, vehicle maintenance, and disposal of pet waste. The handouts were given to all residents spoken with and left at the doorstep of the residents who were unreachable for both the first and second visit. (See attachment for examples of handouts and written material). Personal visits to each resident began December 7 and 8, 2004. Follow-up visits to landowners not home the first time were conducted December 14th, 2004.

Table 1. Project Activity Schedule

DATE	ACTIVITY
11/22/2004	Printing of postcards, doorhangers, and handouts
11/23/2004	Informational postcards mailed to residents
12/07/2004	First visit to Crystal Creek (6 residents) and Crystal Springs Gulch (12 residents)
12/08/2004	First visit to Titlow Park Gulch (38 residents)
12/14/2004	Second visit to all unreachable residents (32)

Titlow - Western Slopes
Public Education and Outreach Project Area



Source: Environmental Services Division,
Public Works Department City of Tacoma
Date: March 21, 2005

0 1,400 2,800 5,600 8,400 11,200
Feet

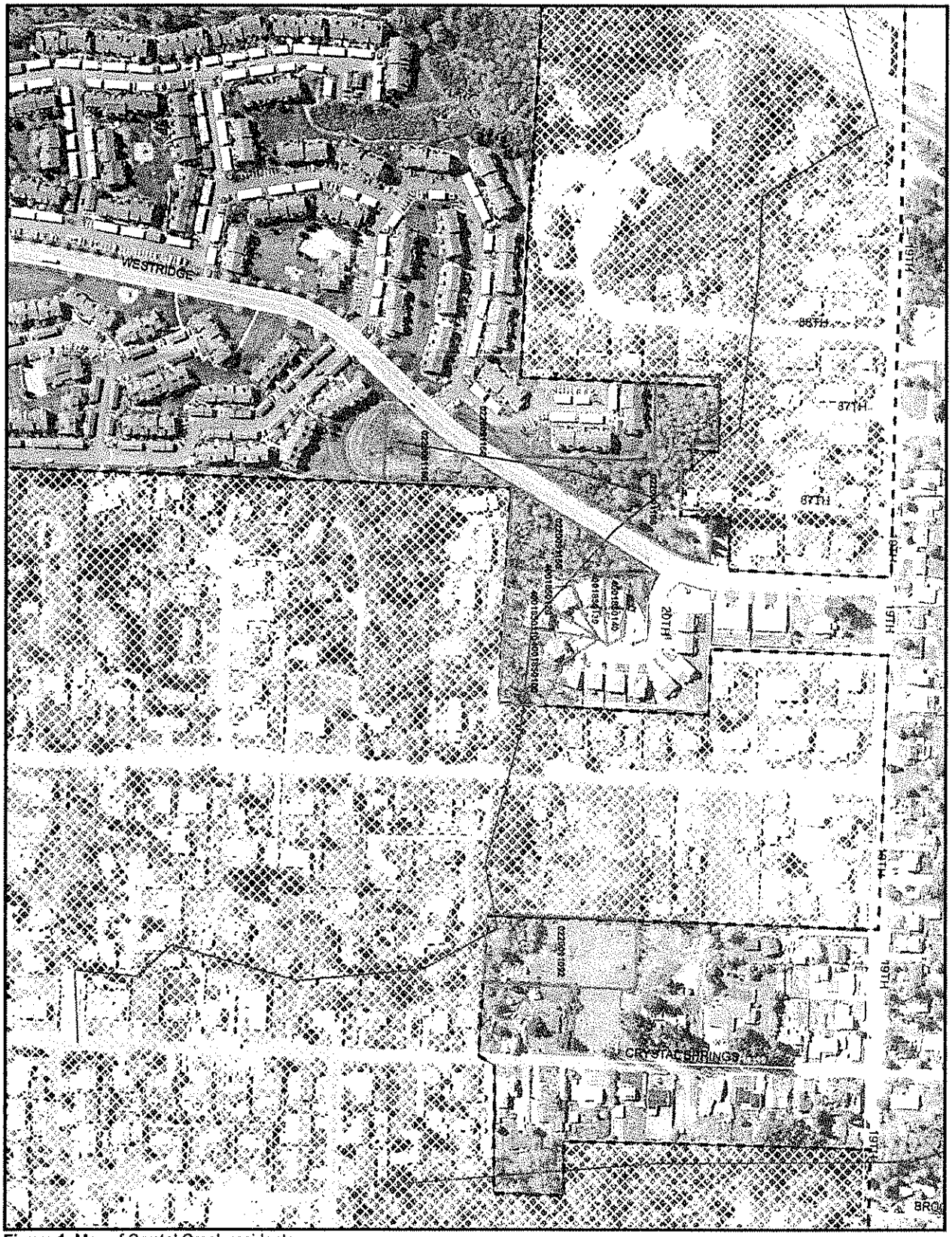


Figure 1 Map of Crystal Creek residents

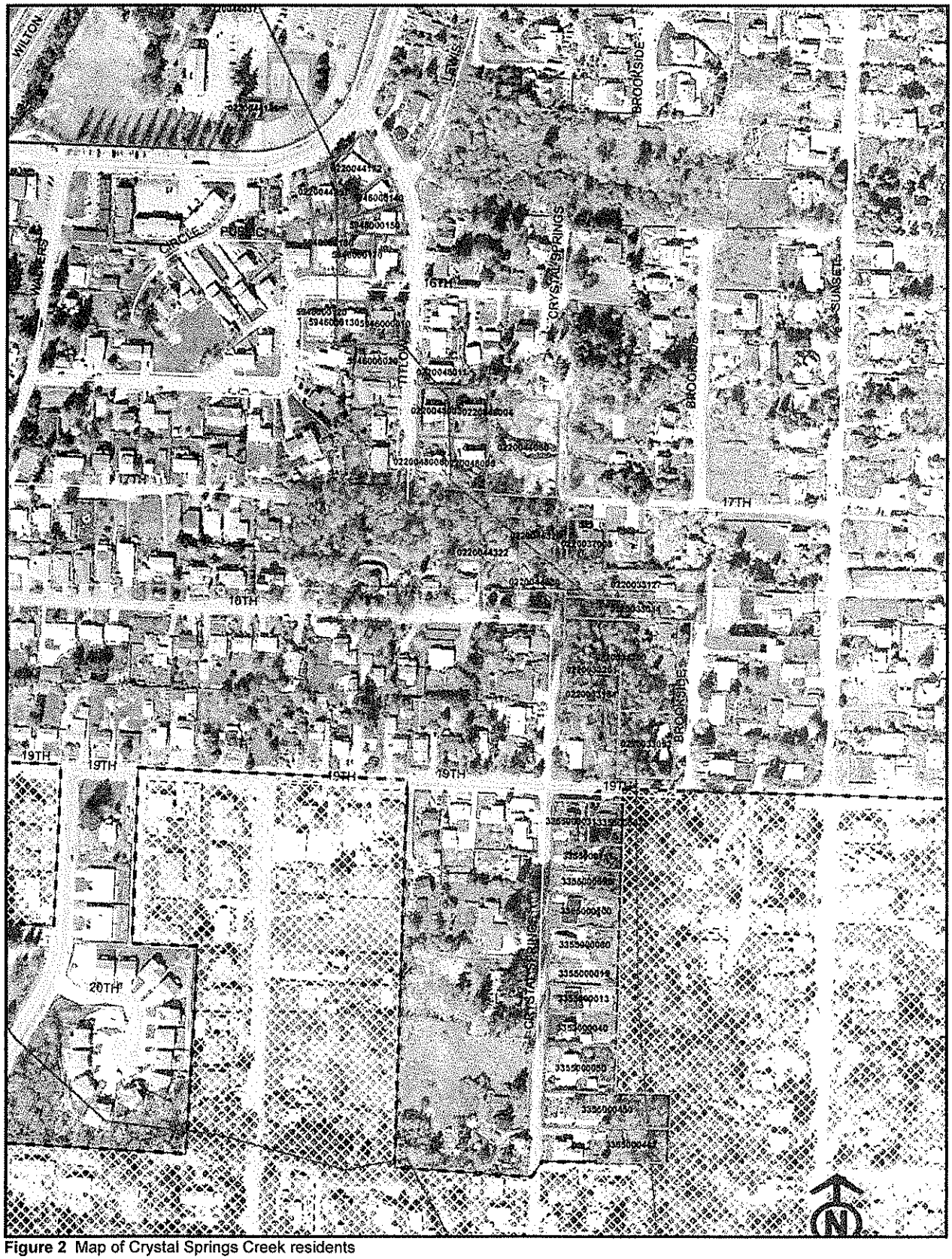


Figure 2 Map of Crystal Springs Creek residents

Figure 3 Map of Titlow Park Gulch residents

Summary of Landowner Comments

During the first homeowner visit, contacts were made and conversations were held with 22 out of the 56 residents. During the second visit, a week later, conversations were held with 5 out of the remaining 34 residents. After two attempts at making personal contact, the total number of conversations was 27 out of the 56. Handouts were either hand delivered or left on the doorstep of all 56 homes, thus getting the message of good homeowner practices to every household.

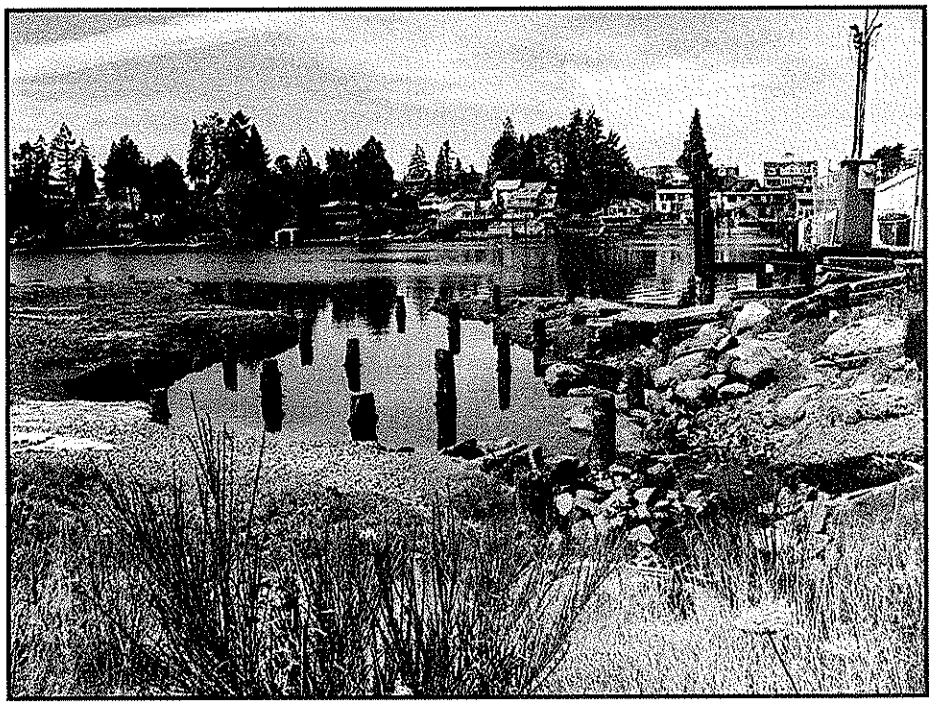
Most residents were interested in the information provided, especially since they were talking about a feature which is in their own backyard. Once initial information was given, most residents continued the conversation, and gave examples of their own awareness and/or practices. The topic that got the most attention was lawn and garden care, specifically the TAGRO information. No one had heard of the product and many said they would look into using the product this upcoming season.

In all, the overwhelming majority of residents along Crystal Creek, Crystal Springs Creek, and Titlow Park Gulch were pleased with the efforts of the City of Tacoma and Pierce Stream Team. Many thanks were received for spreading the message of good land use practices and stewardship. However, one resident called in to discuss issues involving Crystal Springs. He was concerned that Crystal Springs is being used as a storm drain and expressed displeasure with the straightening of the stream and the hardening of the banks with garden cement blocks by the City of Tacoma and Pierce County. He described the neighborhood as informed and concerned, but he believed that the majority of problems are not from the residents.

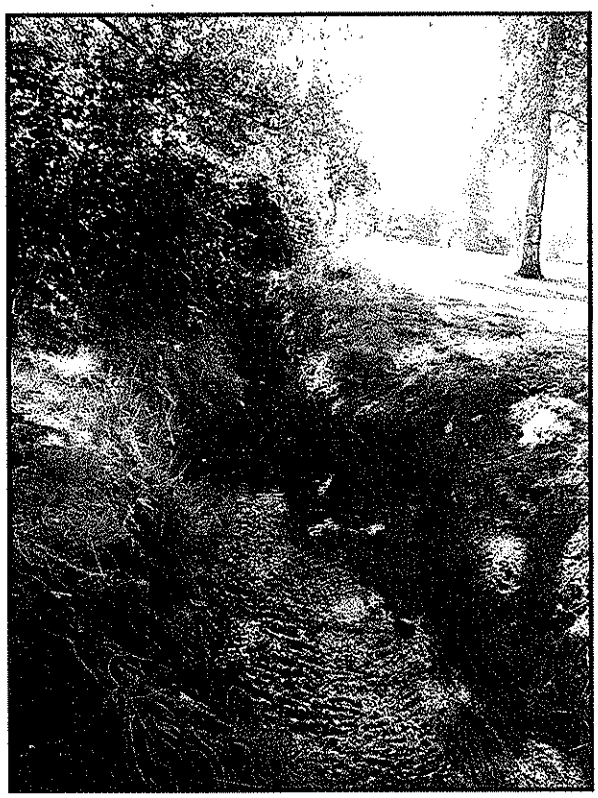
Conclusion

This community education and outreach partnership of the City of Tacoma and Pierce Stream Team benefited everyone involved, from each organization, to the Western Slopes residents, to the Western Slopes watershed. The City of Tacoma was able to reach a targeted neighborhood in a personal, yet professional manner, and Pierce Stream Team was able to create a positive outreach project to spread the message of good homeowner land use practices that benefit the local watersheds of the City of Tacoma.

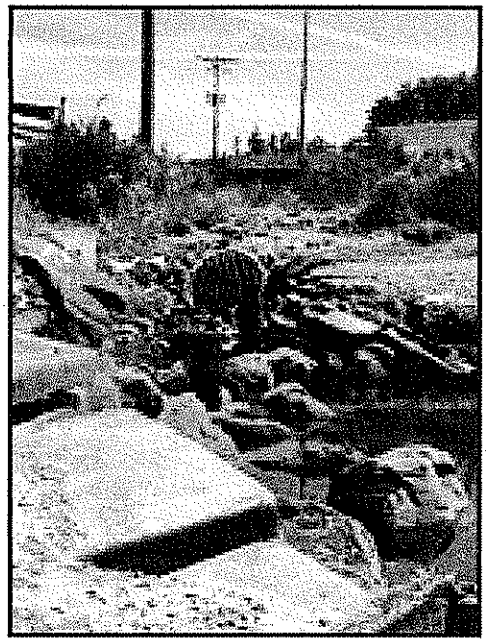
Pictures



Above: Crystal Creek outflow
Below: Titlow Park Gulch



Above: Titlow Park Gulch outflow into pond
Below: Crystal Creek outflow



Coming Soon...

Pictures courtesy of Department of Printing

You can help keep our water clean! Want to learn how? Pierce Stream Team, in cooperation with the City of Tacoma, will be in your neighborhood throughout the month of December to explain. If you would like to be a part of the solution, please call (253) 845-2973 for details.

4 EASY WAYS

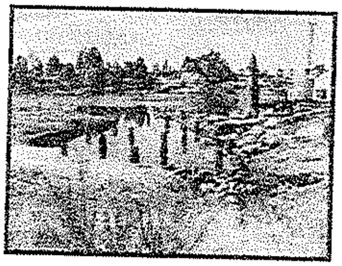
YOU

CAN HELP KEEP OUR LOCAL STREAMS CLEAN

Above: Titlow Park Gulch.

Right: Crystal Creek outfall.

Above: Titlow Park Gulch



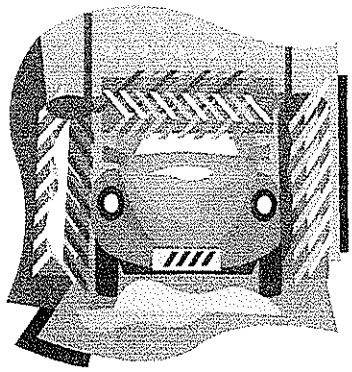
- [illegible]
- Wash cars on unpaved surfaces or use a commercial car washing facility.
- Get car leaks fixed.
- Clean up pet waste immediately

Sorry I missed you, but I will be back ______________________________!

If you would like to schedule an appointment, please call Stream Team at (253) 845-2973.

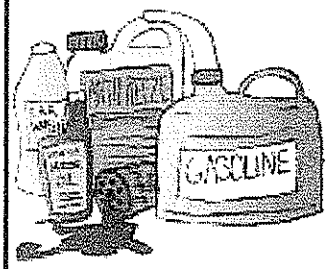
Help Keep Our Streams Clean

Car Washing

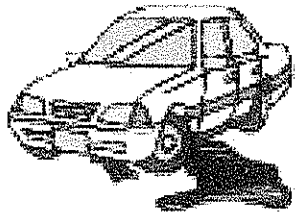


- Wash your car on an unpaved surface to reduce the amount of dirty water going into storm drains.
- Dispose of wash water in a toilet or sink to reduce the amount of pollutants, such as phosphates, dirt, oil and grease, from entering storm drains.
- Use a spray nozzle on your hose to prevent water from running when not in use.
- Use a commercial car wash: all car washes in Tacoma recycle their wash water.

Vehicle Maintenance



- Regularly check your cars for leaks.
- Contain leaks with a drip pan or absorbing material, and get leaks fixed.
- Clean up auto spills as quickly as possible and use a recycling facility.
- Store all unused auto parts under cover; don't let rain collect oil and grime.

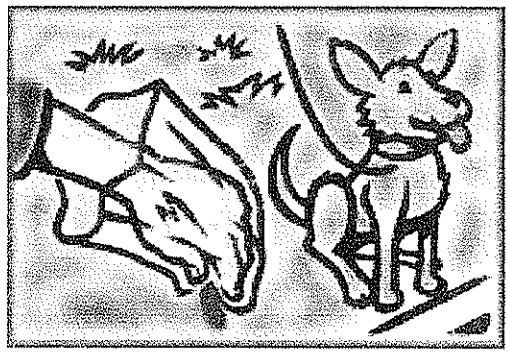


- Recycle your used motor oil, grease, anti-freeze, and other fluids.

Recycling Facility: Household Hazardous Waste Facility, located at Tacoma's landfill, 3510 So. Mullen Street.

Disposal of Pet Waste

- Pick up yard pet waste immediately.
- Carry "doggy bags" on walks to clean up after your pet.
- Properly dispose of pet waste by either putting it in the garbage or flushing it down the toilet.



Water quality monitors are needed on a number of streams throughout Pierce County, including your neighborhood streams in West Tacoma. Please contact Stream Team if you would like to learn more about becoming a monitor on one of your local streams.

Contact Information

Pierce Stream Team
Phone: (253) 845-2973
www.piercecountycd.org/streamtm.htm

City of Tacoma
Phone: (253) 591-5588
www.cityoftacoma.org/environmentalservices

Tacoma
WASHINGTON USA

APPENDIX B

City of Tacoma
Municipal Stormwater NPDES Permit

Urban Creek Assessment Report – 2004 Update on Monitoring Results for Tacoma's Larger Creeks: Garfield, Mason, Puget, Hylebos, Swan and Wapato

This report provides the results from monitoring of Tacoma's larger creeks from January through December 2004.

Submitted by:
Tacoma Public Works
Environmental Services/Science and Engineering Division
2201 Portland Avenue
Tacoma, WA 98421

March 31, 2005

Table of Contents

Background

The City implemented a creek and gulch assessment in 1999 in compliance with its municipal National Pollutant Discharge Elimination System (NPDES) permit. This permit was issued to the City by the Washington State Department of Ecology (Ecology) in 1995. As part of the permit requirements, an Urban Creek Assessment Report was submitted to Ecology in March 2000. This report was based on the information collected in 1999 and was the City's first effort to assess the condition of and the beneficial uses of all of the water bodies within Tacoma. It focused on the City's gulch and stream systems.

Monitoring activities also took place in 2002 on Coski Gulch, Titlow Park Gulch, T-Street Gulch and Dry Gulch. Water quality and location data were collected. Based on the information that was collected, Coski Gulch and Dry Gulch were added to the list of sites to be monitored during the next rainy season. The information that was collected on these sites was reported to Ecology in an Urban Creek Report dated August 2003.

The Urban Creek Assessment Report was updated in February of 2004 to include a written narrative of some of the City's creeks, and a description of the City's proposed creek activities for 2004. A report was submitted to Ecology in April 2004 that addressed the second activity listed above, monitoring during the upcoming rainy season for selected sites. A later report was submitted to Ecology in July 2004 that contained the City's entire creek monitoring results up to the end of July 2004.

Introduction

This report addresses the ongoing creek monitoring activities completed during all of 2004, and includes information from the firs half of the year that was submitted to Ecology in July of 2004. The creeks included in this report are Garfield, Mason, Puget, Hylebos Swan and Wapato. Garfield Creek is a very small creek, but was included because of the high level of community interest in this resource. The creek locations are shown on the City's 2004 Urban Creek Assessment Map, Figure 1.

These sites were monitored by volunteers under the direction of the Stream Team. The Stream Team operates as part of the Pierce Conservation District and Tacoma is one of the Stream Team's major sponsors. Water quality parameters were measured in the field. The sampling results and a discussion of the results are included in this report.

Photographs of each site, maps of each sampling location and the Stream Team's Quality Assurance Project Plan were all included in the report submitted in July and will not be duplicated here.

Beneficial Uses

The beneficial uses of these systems are aquatic and other wildlife habitat including habitat for salmonids, possibly some swimming and fishing, passive recreation with some wading and for industrial purposes.

Hylebos, Swan and Puget Creeks all have salmonid populations. Salmon habitat is being improved on all of these creeks. There may be some fishing activity on these

creeks but it probably wouldn't be encouraged because of the ongoing improvements being made to improve fish habitat. Puget and Garfield Creeks and parts of upper Hylebos Creek and much of Swan Creek are located within parks and are easily accessible to the public for passive recreation such as wildlife viewing and contact recreation such as wading. A variety of community groups and municipal agencies have been involved in many habitat restoration projects along Hylebos, Puget and Swan Creeks. A community group is very interested in habitat restoration in Garfield Gulch. Mason Creek is not readily available for public access due to a fence around the City's wastewater treatment plant that also acts to keep people out of the gulch and away from the creek. There currently are no signs of public use of Mason Creek. The City uses a portion of the water from Mason Creek in its operation of the wastewater treatment plant located in Mason Gulch. The portion of Wapato Creek located in Tacoma is in a very heavy industrialized area and is probably not used for contact recreation.

Stormwater Influences on beneficial uses
Mason Creek does not have stormwater discharged to it until it reaches the City's wastewater treatment plant where some stormwater from the plant is probably discharged to the creek. Puget Creek doesn't have any stormwater influence until just above the outfall where the City's storm line and the creek are comingled. Swan Creek has been heavily impacted by stormwater discharges from Pierce County. Beneficial uses of the creek have been affected by flooding. The County has been involved in several projects to reduce flooding on Swan Creek. Wapato Creek is influenced by stormwater mainly upstream in Fife and Pierce County. Hylebos Creek has been heavily impacted by stormwater, especially in Federal Way. Beneficial uses of the creek have been affected by flooding. Federal Way has been involved in several projects to eliminate flooding and to improve habitat on Hylebos Creek.

City Watershed Map – see Figure 1

Creek Descriptions

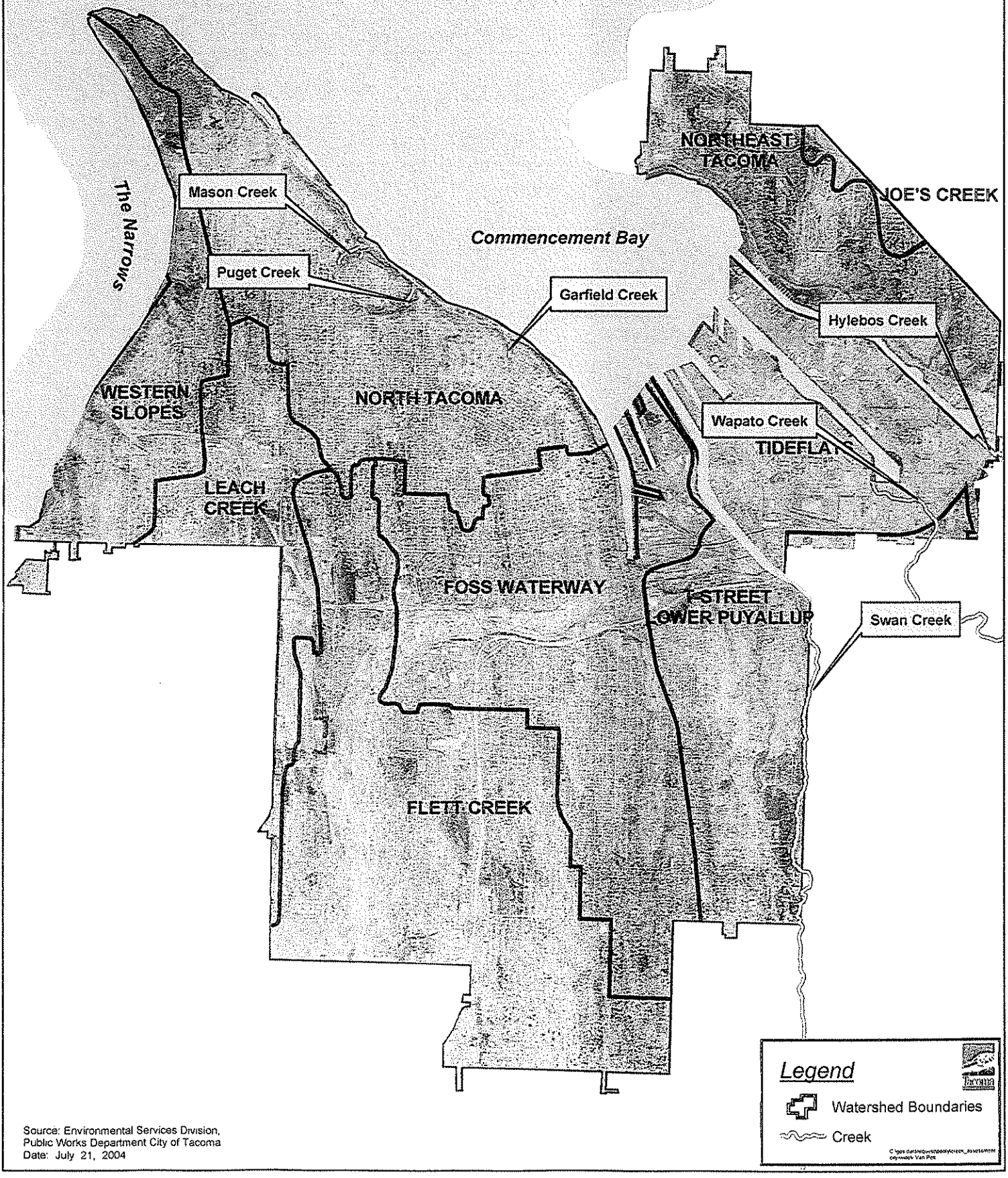
Garfield Creek
Garfield Creek is a very small creek located in Garfield Gulch. It is located in the north end of Tacoma where Schuster Parkway, Ruston Way and North 30th Street converge. This very small creek was included in the City's ongoing creek monitoring program because of the high level of community interest in the gulch and its habitat, including the creek.

Groundwater seeps begin the very low flow in this gulch. This minimal flow is picked up into the stormwater pipe that runs the length of the gulch and discharges into Puget Sound near the City's Tahoma Salt Marsh Natural Resource Damages Assessment (NRDA) restoration site. The creek could not be discharged into the actual salt marsh site because of elevation problems. The newly created intertidal salt marsh and riparian habitat areas were planted with native plants that will benefit both aquatic and upland wildlife.

Some of the upper part of Garfield Gulch was filled in over 100 years ago. A park with ball fields and picnic tables, a very large private school and residential areas surrounds the gulch. This steeply sloped and wooded gulch is infested with invasive ivy. Garfield

2004 Urban Creek Assessment (Sites Visited)

Figure 1



Source: Environmental Services Division,
Public Works Department City of Tacoma
Date: July 21, 2004

Gulch has pedestrian trails that traverse the gulch and run west from the gulch towards Stadium Way.

Mason Creek
Mason Creek is located in a large gulch in Tacoma's north end off Ruston Way. It is one of Tacoma's largest creeks and is an unknown treasure. Its main water source is from groundwater at the head of the gulch; however groundwater seeps are located all throughout the gulch. Because of the steep slopes, and lack of public access to the gulch, wooded buffers have been preserved. Tacoma Water maintains a utility access road through part of the gulch. Located at the mouth of the gulch is the City's Wastewater Treatment Plant No. 3. The fencing around this plant blocks any public access to the gulch. A portion of the creek water is used in the treatment process and the rest is piped under the City's wastewater plant, the railroad tracks and Ruston Way and under MetroParks property to its discharge point in Commencement Bay.

The City is currently considering a possible restoration project that would daylight the last 200 feet of the creek that currently is piped under MetroParks property.

Puget Creek
Puget Creek is located in the north end of Tacoma along Ruston Way, west of Garfield Creek. Puget Creek is located in a very large gulch that is surrounded by residential properties. Storm and sanitary lines run the length of the gulch. Stormwater is separated from the creek's water until the last 300 feet where both join and are piped under the railroad tracks and Ruston Way to its discharge point in Commencement Bay. Because of the steep slopes, wooded buffers have been preserved. One street has a bridge that crosses the gulch. Some residential homes have directed their roof runoff into the gulch via flexible pipe. At the end of gulch, the creek passes through a couple of residential yards and what used to be a MetroParks garden. The house once located on this property has been removed and the large garden area has since been reclaimed with native plantings. A driveway culvert has been replaced with a more fish friendly box culvert.

The Puget Creek Restoration Society, a community non-profit group, has completed many projects to enhance the habitat of the creek and the gulch. Their web site, www.pugetcreek.org contains additional information about the creek. They have worked hard to return salmon runs to the creek and have had some success to date. They have also drafted a watershed management plan for the creek.

Hylebos Creek
Hylebos Creek begins in Federal Way near the Sea-Tac Mall and flows through the cities of Federal Way, Fife, Milton, Edgewood and Tacoma, the Puyallup Reservation and parts of unincorporated King and Pierce Counties. Its three main tributaries flow south alongside Interstate 5 and Highway 99 where they join and flow into the Hylebos Waterway and Puget Sound's Commencement Bay. The Hylebos Basin drains 18 square miles from Federal Way to Commencement Bay and encompasses 35 stream miles, 250 acres of wetlands, 11 named lakes and numerous unnamed lakes.

Approximately the first 4,000 feet of the creek (from the Hylebos Waterway to the City limits) is located within the City of Tacoma. In Tacoma, the creek is bordered on the west side by several houses whose lots abut the creek. Near the mouth of the creek, but before the start of the waterway, the creek is crossed by a major highway, SR #509,

and railroad tracks. Also near this area is a tide gate that controls ditches draining into the creek from the extensive Fife ditch system.

Hylebos Creek supports salmon. A non-profit group called Friends of the Hylebos Wetlands has worked hard to educate the public about the creek and with many municipalities to restore portions of the creek to improve salmon habitat and to purchase buffer areas to improve the function of the creek. They are currently working with the Washington State Department of Transportation (WSDOT) on a large restoration site that serves as a mitigation site for a WSDOT project on I-5. Their website, www.hylebos.org contains a lot of information about the creek upstream of Tacoma. The Puyallup Tribe, Citizens for a Healthy Bay and others have been involved in restoration projects near the mouth of the creek in Tacoma and along the Hylebos Waterway. The Hylebos Waterway is a Superfund site and is currently in the process of being cleaned up by several private parties.

Swan Creek

Swan Creek originates in Pierce County south of Highway 512. It flows to the north towards the Puyallup River and along the City of Tacoma-Pierce County boundary. It enters a narrow canyon at approximately Creek Mile Three and leaves the canyon just south of Pioneer Road at approximately Creek Mile 0.5. The creek then flows north then east to its confluence with Clear Creek. Clear Creek then flows into the Puyallup River. The discharge point is located in Pierce County, as are most of the lower reaches of the creek. This creek is utilized by salmonids.

Its associated drainage basin is large, encompassing hundreds of acres, most of which are in Pierce County. A small portion of the basin lies along Tacoma's eastern border. Much of the land located within the lower portion of the drainage basin is located within Swan Creek Park, which is owned and operated by MetroParks Tacoma. The City maintains one 10-inch stormwater pipe that discharges to the creek. Overall the City contribution to the stormwater in the creek is minimal.

Swan Creek has been experiencing erosion problems due to erodible soils and increased flows in the basin. Sediments are being deposited in the lower portion of the channel, near Pioneer Way and in the past have blocked the culvert flowing under the road causing it to flood. Pierce County installed a sedimentation pond off Pioneer Way to collect these sediments. County crews maintain the ponds. Pierce County also recently completed the installation of four stormwater detention ponds in the vicinity of Waller Road and East 80th Street to better manage heavy flows of stormwater.

In general, the portions of Swan Creek that lay within the City of Tacoma limits have large wooded buffers and are for the most part undeveloped. Within the City limits, two streets, a major City water pipeline, and the mainline railroad tracks cross the creek prior to its confluence with Clear Creek.

The City recently constructed a habitat restoration site near the mouth of Swan Creek. This NRDA (Natural Resource Damages Assessment) stream restoration site project is located on 12 acres of property bordering Swan Creek. The project included both enhancement of the Haire Wetland and portions of Swan Creek. Historically the upland portion of the site used to be a wetland. In the 1970's, that wetland was filled to build a single-family residence. Now, a 530-foot channel connects Swan Creek to the Haire Wetland whereas it had been previously separated by soil fill for over 30 years. The

reconnection allows Swan Creek's aquatic inhabitants, including both chum and coho salmon, to use the wetland area for refuge and for a food source. In addition, the area was planted with many native plants. In 2004, the Washington Waterfowl Association identified Swan Creek as good wood duck habitat and placed 4 wood duck boxes with hopes of attracting nesting pairs.

The Friends of Swan Creek is a newly formed community group that meets monthly. They are interested in the preservation of the creek.

Wapato Creek
Upper Wapato Creek is located in the City of Fife and in Pierce County. The lower part of Wapato Creek is located in Tacoma in an industrialized area of the Tideflats. The creek parallels Alexander Avenue and Ward Street within the City of Tacoma limits. These unimproved streets undoubtedly contribute some runoff to the creek. Buffers are narrow to nonexistent with limited riparian vegetation. The creek is crossed by a major highway, SR-509, by railroad tracks and a by an access road to a major industrial area. The creek has been extensively straightened and channelized and is controlled by a tide gate where the creek enters the Blair Waterway.

Discussion and Analysis of Monitoring Results

Summary
Overall the water quality measured at the above sites was excellent.

Please refer to the Water Quality Data section for complete sampling results for all of the creeks. The following parameters were measured, including but not limited to: pH, dissolved oxygen, temperature, turbidity, water appearance and stream bed coating. Other parameters such as discharge, nitrates and odor were measured at some sites as well.

Garfield Creek
Water quality monitoring started in Garfield Creek in January 2004. The site was monitored four times during 2004. The pH, dissolved oxygen and temperature levels were all acceptable. The appearance of the water was clear and the streambed coating varied. During the dry season, the flow in the creek was so low that it was not possible to take samples.

Mason Creek
Water quality monitoring also started in Mason Creek in January 2004. The creek upstream of the wastewater treatment plant was monitored 10 times during 2004 and the outfall was monitored two times. The outfall is underwater at high tide and is not easily accessible for monitoring during the winter when there are few very low tides. This creek is entirely spring fed until it reaches the wastewater plant. There may be some stormwater runoff from the plant that is discharged into the creek. The pH, dissolved oxygen and temperature levels were all acceptable. The turbidity levels were very low, water appearance was clear and there was no streambed coating.
Puget Creek
Puget Creek has been monitored at least once a year since 1995. The creek was monitored 12 times in 2004 and the outfall was monitored two times. The outfall is underwater at high tide and is not easily accessible for monitoring during the winter

when there are few very low tides. The pH, dissolved oxygen and temperature levels were all acceptable. There was one low reading of dissolved oxygen, 7.5 mg/l in April of 2004. Turbidity was low. The water appearance was consistently clear and there usually was no streambed coating.

Hylebos

Hylebos Creek was monitored 16 times in 2004. Hylebos Creek flows through a variety of municipalities and only the most downstream portion is in Tacoma. Some of the monitoring sites that are included are located in the City of Fife just upstream of Tacoma. This creek is influenced by salt water at high tides. The pH was always acceptable. Only one temperature reading exceeded 16 degrees C. The dissolved oxygen levels were variable, nine samples were greater than or equal to 9.5 mg/l, six samples were between eight and 9.5 mg/l and one sample was 7 mg/l. The turbidity levels were variable and the streambed coating was usually brown.

Swan

Monitoring in Swan Creek started in 1994. The creek was monitored 28 times in 2004. Swan Creek is located in both Tacoma and in Pierce County. The monitoring sites that were used were all along the lower portion of the creek which is located in Pierce County. The pH and dissolved oxygen levels were all acceptable. Two temperature samples were less than 16 degrees C. A sample taken in at the end of July was 21 degrees C and one taken at the end of August was 19 degrees C. The water appearance was almost always clear. The streambed coating data was mixed. Some of the time there was no coating and some of the time there was a coating of brown, orange or a mixed color.

Wapato

Wapato Creek was monitored seven times in 2004. The overall water quality of this creek was acceptable. The pH levels were acceptable, the dissolved oxygen levels were lower than in the other creeks and two of the temperature levels exceeded 16 degrees C, and were 16.5 and 17 degrees C. The turbidity levels were higher when compared to the other creeks. The water appearance was not clear and there was always a stream bed coating. Odors were noted three times. This creek may be impacted by the heavy industrial area that it travels through in Tacoma's Tideflats area. It also travels through commercial and agricultural land upstream of the City of Tacoma. Industrial, commercial and agricultural uses could all result in pollutants being discharged to the creek either through direct discharges or through stormwater discharges.

Recommendations

The beneficial uses of these creeks are not being impacted by the discharge of stormwater from Tacoma. Hylebos, Swan and Wapato Creeks continue to be impacted by upstream stormwater discharges. Several of the upstream municipalities are addressing their stormwater impacts to these creeks.

The creeks all had either excellent or extraordinary water quality and all met the 1997 State Water Quality Standards for Surface Waters of the State of Washington. However, the water quality in Wapato Creek was less than that in the other creeks.

It is important for the City to maintain its monitoring program on these creeks in order to determine if any significant trends are developing with respect to water quality. Narrows Creek will be added to the list when the construction of the new Narrows Bridge is far enough along to allow safe access to the creek. A lake monitoring program will be added in 2005. Snake, Wapato and China Lakes will all be added to the monitoring program. The City will continue to utilize Stream Team volunteers to do the monitoring of these creeks and of the lakes.

Water Quality Data for Tacoma Streams - 2004

Garfield Creek Site 1 - located at the bottom of Garfield gulch just beyond the fence. Doesn't flow year round. Lat=47.27000, long=-122.45834.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N (mg/l)	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	EPA Streamwalk/Comments
1/24/2004	Garfield	1	2:30 PM	7.5	11.5	0	95	6	7	10	clear		sandy	none	Rain previous 24 hrs.
2/21/2004	Garfield	1	2:30pm	7.5	11.5	0	96	11	8	10	clear		blackish sediment	None	Showers previous 24 hrs.
3/27/2004	Garfield	1	3:00pm	7.5	11	0	98	13	10.5	5	clear		muddy	musky	Rain previous 24 hrs. Stream very shallow.
4/24/2004	Garfield	1	1:00pm	7	10.5	1	95	12.5	11	10	clear		brown	none	Showers previous 24 hrs.

Mason Creek Site 1 - upstream of wastewater Treatment plant. Lat=47.28824, long=-122.49991.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N (mg/l)	% DO	Air Temp C	Water Temp C	Turbidity (JTU)	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	EPA Streamwalk/Comments
1/23/2004	Mason	1	10:15am	7.8	11	3	96	8	10	10	Clear		None	None	Overcast previous 24 hrs. Unable to do discharge because of overhanging branches.
2/26/2004	Mason	1	1:50pm	7.2	11	2	105	9	11.5	0	Clear		None	None	Storm previous 24 hrs. Rain at time of monitoring.
3/18/2004	Mason	1	2:15pm	7.2	12.5	1.5	111	9.5	10.5	0	Clear		None	None	Showers previous 24 hrs.
4/22/2004	Mason	1	1:30pm	8	8	1	72	14	11	0	Clear	5.6	None	None	Clear previous 24 hrs.
5/20/2004	Mason	1	1:00pm	7.8	11	3	105	14	10.5	5	Clear	1.96	None	None	Clear previous 24 hrs.
6/28/2004	Mason	1	1:00pm	7.4	11	2	102	18	12.5	0	Clear	3.3	None	None	Clear previous 24 hrs.
9/17/2004	Mason	1	9:20am						10.8		Clear			None	Habitat assmt: Rain previous 24 hrs, clear now. Width of stream= 12'. Water treatment plant present. Wetland zone has recently been marked by blue & yellow flagging. Score = 197; 89.5 good.
10/4/2004	Mason	1	1:30pm	7.8	11.5	1.2	105	12	11	0	Clear	15.7	None	None	Fog; clear previous 24 hrs. High tide @ 10:55am, low tide @ 4:03pm
11/22/2004	Mason	1	1:00pm	7.6	9	1.5	78	7.9	9.1	0	Clear	3.25	None	None	Rain, mist, for; showers previous 24 hrs.
12/28/2004	Mason	1	1:30pm	7.7	10	2.5	90	4.5	10	0	Clear	5.56	None	None	Fog & mist; clear previous 24 hrs. Dave at the treatment plant said the city of Tacoma had two rights of way surveyed on the east and west sides of the gulch for a flume line.

Mason Creek Site 2 - at outfall to Commencement Bay. Lat=47.2869, long=-122.48762.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N (mg/l)	% DO	Air Temp C	Water Temp C	Turbidity (JTU)	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	EPA Streamwalk/Comments
4/22/2004	Mason	2	2:45pm	8	10	0	90	16	11	0	foam		brown, algae present	None	Clear previous 24 hrs.
5/20/2004	Mason	2	2:15pm	7.8	11	1	107	15	11.5	5	clear			None	Clear previous 24 hrs. Low tide at 12:36pm

Puget Creek Site 1 - at Puget Gardens, downstream side of walking bridge. Lat=47.27916, long= -122.4789.

Date	Stream	Site #	Time	pH	DO(mg/l)	Nitrate	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge cfs	Stream Bed Coating	Odor	EPA Streamwalk/Comments
1/17/2004	Puget	1	9:00am	7.75	9.50	2.00	83	5	10	3	Clear	1.77*	orange to red/small patch of oily residue	None	Showers previous 24 hrs. **New discharge measurement.**
3/6/2004	Puget	1	8:15am	8.00	10.50	4.00	95	6	10	0	Clear	1.83	None	None	Showers previous 24 hrs.
4/18/2004	Puget	1	9:00am	7.25	7.50	5.00	67	11	11	0	Clear	1.6	None	None	Showers previous 24 hrs.
6/13/2004	Puget	1	9:00am	7.50	10.50	5.00	88	6	8	7	Clear	2.1	None	None	Showers previous 24 hrs.
7/10/2004	Puget	1	9:00am	7.50	9.50	5.00				0	Clear	1.41	None	None	Clear. Showers previous 24 hrs. No thermometer in kit.
8/14/2004	Puget	1	8:15am	7.50	10.50	6.00	100	15	13	0	Clear	1.1	None	None	Cloudy, clear previous 24 hrs.
11/13/2004	Puget	1	8:30am	7.50	11.50	2.00	90	10	11.5	0	Clear	1.2	None	None	Cloudy; overcast previous 24 hrs. Ran rep: DO = 10; pH = 7.5; NO3N = 2.

Puget Creek Site 2 - Puget Park, south of gardens at log creek crossing (upstream of site #1). Lat=47.27843, long= -122.47961.

Date	Stream	Site #	Time	pH	DO(mg/l)	Nitrate	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	EPA Streamwalk/Comments
2/22/2004	Puget	2	1:00pm	7.8	11.5	3.0	103	12	11	5	Clear		None	None	Mountain bikers using trails in park during monitoring.
4/25/2004	Puget	2	8:00am	7.5	10.0	3.0	90	10.5	11	0	clear		None	None	Clear previous 24 hrs.
6/21/2004	Puget	2	7:36pm	7.8	9.5	5.0	85	18	12	0	Clear		None, some cobbles have orange brown stain	None	Clear previous 24 hrs.
9/6/2004	Puget	2	2:30pm	7.5	10.0	3.0	95	17	11.5	0	Clear		None	None	Partly cloudy, clear previous 24 hrs.
11/7/2004	Puget	2	3:30pm	7.5	11.0	3.0	100	11.5	11	0	Clear		None	None	Partly cloudy; overcast previous 24 hrs. Stream 1-2 m. wide, <15cm. Deep.

Puget Creek Site 3 - at outfall to Commencement Bay. Lat=47.2807, long= -122.47765.

Date	Stream	Site #	Time	pH	DO(mg/l)	Nitrate	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	EPA Streamwalk/Comments
6/12/2004	Puget	3	8:45am	7.5	10	2	92	14	12	5	Clear		green on culvert	rotten egg, musky	Low tide at 8:47am. Showers previous 24 hrs. First time ran DO got 5.5 mg./l, 2nd run of test: DO = 10.0 mg/l.
7/18/2004	Puget	3	1:30pm	7.5	10.5	0	100	24	14	5	Clear		sand, seaweed		Low tide at 12:30pm

Hylebos Creek Site 1 - 4th St bridge, upstream side. Lat=47.2536, long= -122.35023.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
1/17/2004	Hylebos	1	9:20am	7	10	2	75	4	4	10	brownish		brown	none	Bank vegetation has been matted down due to previous bank flooding
2/21/2004	Hylebos	1	1:00pm	7	10	1	83	21	9	5	clean, brownish		brown	slight rotten egg, brackish	Overcast preivous 24 hrs. Habitat assesmt.: Single family housing, lawns, commercial/industrial, paved roads/bridges, unpaved rods, hiking trail, swimming/boating, industry present. Score = 105; 48% poor.
3/26/2004	Hylebos	1	10:35am	7.3	11	1	95	8.8	9	20	brownish		brown	none	Showers previous 24 hrs. High tide 7:24am. Heavy water flow.
4/17/2004	Hylebos	1	9:45am	7.5	9.5	1	85	12.8	10	5	clear, brownish		brown	none	Showers previous 24 hrs. Low tide at 11:02am.
5/22/2004	Hylebos	1	9:30am	7.5	9	1	81	12.8	11.5	10	brownish		brown	none	Showers previous 24 hrs. Low tide @ 1:48pm, high tide @6:18am.
6/26/2004	Hylebos	1	11:00am	7.5	9.5	1.5	90	22	14	0	clear		brown & lots of algae	brackish	Clear /overcast previous 24 hrs. Low tide at 6:51am, high tide at 12:33pm.
7/30/2004	Hylebos	1	10:00am	7.5	7	1	70	18.3	16	5	brownish		brown	none	Cloudy.
8/30/2004	Hylebos	1	9:45am	7.5	9	1	87	18.3	14	10	clear		brown, algae present	brackish	Cloudy; showers previous 24 hrs.
9/25/2004	Hylebos	1	9:50am	7.5	14	0	128	18.3	12	15	muddy, brownish		brown	none	Partly cloudy; showers previous 24 hrs. Low tide at 9:07am
10/30/2004	Hylebos	1	10:20am	7.5	8.5	1	75	11.1	9	20	brownish		brown	none	High tide, slow flow. Clear. High tide at 8:00am, low tide at 1:17pm.
11/20/2004	Hylebos	1	10:00am	7.3	8.5	1	68	4.4	6	10	brownish, scum floating on top		brown	none	Cloudy; clear previous 24 hrs. High tide at 12:22pm, low tide at 4:57am.
12/10/2004	Hylebos	1	10:00am	6.8	9	2	77	12.8	9	20	browniish		algae on rocks	none	Cloudy; rain previous 24 hrs. Low tide at 9:14am.

Hylebos Creek Site 6 - downstream side of Highway 509 crossing. Lat=47.25914, long= -122.35745.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
5/13/2004	Hylebos	6	4:30pm	7.5	9	0	90		16	25	Oily sheen		Brown	rotten egg	Overcast previous 24 hrs. High tide at 1:50pm, low tide at 7:43pm

Hylebos Creek Site 7: 111- 57th Ave . Lat=47.25647, long= -122.35249.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
2/1/2004	Hylebos	7	3:00pm	7	10.5	0	85	8	6.5	15	brownish with foam			Musky	Storm previous 24 hrs. This site is tidally influenced
4/17/2004	Hylebos	7	7:45am	7.5	16.5	0	145	16	10	5	brownish		brown	none	Rain at sampling time, showers previous 24 hrs. DO seems high. Low tide at 11:02am.
8/2/2004	Hylebos	7	6:00pm	8	19	0		25	20	15	muddy		brown	Musky	Clear. High tide at 8:06pm, low tide at 12:52pm. DO seems unusually high, need

Swan Creek Site 1 - Swan Creek Park, upstream of hiking bridge. Lat=47.22528, long= -122.39381.

Date	Stream	Site #	Time	pH	DO (mg/l)	Nitrate	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
1/28/2004	Swan	1	10:10am	7.5	12.0	0.5	98	9	7	0	milky, clear	25.6	Brown, none	Rotten salmon	Showers previous 24 hrs. **New discharge measurement.**
2/27/2004	Swan	1	10:10am	7.5	12.5	1.0	104	9	8	15	milky	25.8	None	acrid, none	Showers previous 24 hrs.
3/26/2004	Swan	1	10:10am	7.5	12.0	1.5	98	7.5	7.5	0	Clear	5.6	None	None	Rain at sampling time. Showers previous 24 hrs.
5/3/2004	Swan	1	10:15am	7.5	11.5	2.0	104	17	11.5	0	Clear	3.7	None	None	Showers previous 24 hrs.
5/27/2004	Swan	1	10:15am	7.5	10.5	1.8	94	13	11	0	Clear	3.4	None	None	Rain previous 24 hrs.
6/30/2004	Swan	1	10:15am	7.5	11.5	1.5	102	16	11	0	Clear	2.1	None	None	Clear/overcast previous 24 hrs.
7/30/2004	Swan	1	10:15am	7.5	10.5	2.0	98	17	12.5	0	Clear	2	None	None	Cloudy. Clear previous 24 hrs. Stream diverted for pond cleaning, no effect at test site.
9/1/2004	Swan	1	10:12am	7.5	11.0	1.0	102	15.5	12.5	0	clear	2.98	None	None	Clear; showers previous 24 hrs.
9/30/2004	Swan	1	9:22am	7.5	11.0	1.0	97	12	10	0	Clear	2.6	None	None	Cloudy; overcast previous 24 hrs.
10/29/2004	Swan	1	10:15am	7.5	12.0	2.0	104	8.5	9.5	0	Clear	3	None	None	Clear; showers previous 24 hrs.
11/30/2004	Swan	1	9:15am	7.5	12.0	1.0	96	3.5	6.5	0	Clear	5.9	None	None	Partly cloudy. Chum are in!
12/21/2004	Swan	1	10:12am	7.5	11.5	1.5	91	5	6	0	Clear	3	None	Rotten fish	Cloudy; overcast previous 24 hrs. Chum carcasses.

Swan Creek Site 4 - behind Little Red Smokeshop, downstream of culvert under Pioneer Wy. E. Lat=47.22912, long= -122.39183.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
2/8/2004	Swan	4	11:00am	7.5	12.0	0.0	97	7.5	7	0	Clear		Brown	Slight sewage	Overcast previous 24 hrs. Blackberry bushes and vegetation almost absent on streambank. Mud on side of streambank, wasn't there last time monitored.
4/24/2004	Swan	4	2:00pm	7.5	12.0	1.0	111	16	12.5	0	Clear	5.15	Brown	None	stream to do discharge bubbles of gas bubbled up from streambed, bubbles smelld like H2S.
5/29/2004	Swan	4	12:00pm	7.5	10.5	1.0	96	15	12	0	Clear		Brown	None	Showers previus 24 hrs. Stream flow is less. Lots of streambank vegetation.
8/19/2004	Swan	4	12:30pm	7.5	10.5	1.0			14	3	Clear		strings of algae on rocks	None	plants & trees are planted is overgrown with weeds.. Reps: pH=7.5, DO = 9, NO3=1.
10/16/2004	Swan	4	2:30pm	7.5	10.5	2.0	94	14	11	0	Clear		brown	None	Rain; rain previous 24 hrs. Habitat assmt: single family housing, lawns, paved bridges present. Score = 133, 60% fair.
12/18/2004	Swan	4	12:00pm	7.5	11.5	1.0	98	13.5	9	0	Clear		Brown	decaying organic matter	Clear; clear previous 24 hrs. Saw 2 dead salmon each about 18" long in the stream.

Swan Creek Site 7 - upstream of site 1. Lat=47.22501, long= -122.39413.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N	%DO	Air Temp C	Water Temp C	Turbidity	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
1/31/2004	Swan	7	11:00am	7.2	14.5	1.0	112	8	6	10	brownish		Orange to red, brown	decayed salmon smell	Heavy rain previous 2 hrs. Did not do flow because of salmon.
2/18/2004	Swan	7	2:30pm	7.0	12.0	1.0	100	11	8	5	clear	17.1	Brown	None	Showers previous 24 hrs. New discharge measurement.
3/13/2004	Swan	7	12:00pm	7.8	13.5	1.0	115	15	9.5	0	clear	4.28	Brown, yellowish	None	Clear preivous 24 hrs.
4/17/2004	Swan	7	10:25am	7.5	14.5	2.0	125	12	10	0	clear	5.3	brown	none	Showers previous 24 hrs. Low water level. Algae on rocks.
5/29/2004	Swan	7	12:00pm	7.5	12.5	1.5	110	17	11	0	clear		orange to red	None	Showers previous 24 hrs.
6/26/2004	Swan	7	10:45am	7.0	9.5	6.0	85	20	12	0	clear	4.2	brown	None	Clear previous 24 hrs.
7/25/2004	Swan	7	2:30pm	7.3	10.0	1.0	110	25	21	0	slighlty milky, clear		brown	none	Bridge to site is very unstable. Weather clear. Clear previous 24 hrs.
8/31/2004	Swan	7	4:20pm	7.5	10.5	1.5	100	13.5	19	0		3.6			Clear; clear previous 24 hrs. Field check.
9/18/2004	Swan	7	11:00am	7.0	12.5	2.0				0	clear	5.3	yellowish	none	Cloudy; storm previous 24 hrs. Thermometer missing from kit. Habitat assmt: hiking paths, gravel pits present. Score= 126; 57%, poor
11/26/2004	Swan	7	12:00pm	7.8	15.0	0.0	130	12	9	0	clear		Brown	none	No discharge due to salmon spawning. Habitat assmt: trails present. Score = 182; 83%, good. Clear; clear previous 24 hrs.

Wapato Creek Site 1 - Hwy 509/Alexander Ave. Lat=47.24921, long= -122.37259.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N	% DO	Air Temp C	Water Temp C	Turbidty (JTU)	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
2/10/2004	Wapato	1	10:30am	7.5	11.0	0.0	86	2.5	5.5	15	brownish		brown, gray	None	Clear previous 24 hrs. This site is located at the actual mouth to the creek. Tidally influenced.
3/8/2004	Wapato	1	9:00am	7.0	8.0	0.0	71	12	10	20	clear		orange to red	none	Overcast previous 24 hrs. High tide at 6:04am, low tide at 12:23pm
5/29/2004	Wapato	1	12:30pm	7.5	10.0	1.0	101	17.5	16.5	10	scum		brown, gray	musky	Showers previous 24 hrs. Tide receeding, mid-way between high and low tide.
7/24/2004	Wapato	1	2:00pm	7.5	7.5	2.0	78	21	17	25	cloudy		brown	acrid	Clear, clear previous 24 hrs.
11/23/2004	Wapato	1	8:10am	7.5	9.5	0.0	80	8	8.5	5	clear		brown	none	Overcast; overcast previous 24 hrs. Low tide @ 8:32am.

Wapato Creek Site 7 - at the Pick Quick on Pacific Hwy & Alexander Ave. Lat=47.24293, long= -122.37267.

Date	Stream	Site #	Time	pH	DO (mg/l)	NO_3N	% DO	Air Temp C	Water Temp C	Turbidty (JTU)	Water Appearance	Discharge (cfs)	Stream Bed Coating	Odor	Comments
2/6/2004	Wapato	7	10:00am	7.0	10.0	2.0	79	3	5.5	10	clear		brown	musky	Overcast previous 24 hrs.
11/23/2004	Wapato	7	9:20am	7.5	8.5	2.0	72	9	8	5	clear		brown	none	Overcast; overcast previous 24 hrs.

APPENDIX C

ENVIRONMENTAL STEWARDSHIP

Making their splashes

RUSS CARMACK/The News Tribune

Dan Borba of Down to Earth Gadgets and Gizmos, a small business that specializes in rain barrels, installs two of the rain-saving contraptions last week in Tacoma. Borba's company won a conservation grant from the City of Tacoma.

Tacoma awards grants for water conservation ideas

Tacoma issues its annual Make a Splash grants to community groups interested in promoting water conservation and a clean environment.

BY SUSAN GORDON
The News Tribune

The people who manage the water that runs off Tacoma's streets and into its storm drains say they need the public's help to keep it clean.

So they sponsor an environmental stewardship awards program to inspire city residents to conserve water and prevent contamination of Puget Sound and area waterways.

Recently, city officials awarded Make a Splash grants of up to $2,500 to 19 individuals and organizations for projects involving art students, scuba divers, church car washes, blueberries, water bugs, rain barrels and teachers.

In all, the grants total $44,715. The money comes out of $15.7 million in surface water fees paid annually by householders and other city property owners.

This is the second year of the program. In 2003, the city awarded $31,197 for similar projects designed to promote public awareness of water quality issues. City officials don't audit the projects, but ask recipients to report on their activities at the end.

Here are some of this year's awards:

■ Blueberry Park Volunteers, $2,500, for wetland restoration and trail building at the 20-acre Metro Parks property, southwest of the intersection of East D Street and East 72nd Street.

■ Boys and Girls Club, Gonyea branch, $2,500, for an environmental club and field-based studies.

■ Citizens for a Healthy Bay, $2,357, for tools and supplies to teach volunteers about habitat restoration and monitoring at five Commencement Bay sites.

■ Divers' Ecological Society, $2,500, for six marine habitat training events for divers and beachcombers.

■ Down to Earth Gadgets and Gizmos, $2,500, to install rain barrels at community garden sites in low-income neighborhoods and outside several city schools.

■ Environmental Education Asso-

Please see WATER, page B4

SELECTED PROJECT IDEAS

■ Become actively involved in stream or wetland restoration and protection.

■ Restore or protect streams and wetlands by planting vegetation, cleanups or educational field trips.

■ Make a radio or TV program or public service announcement on environmental education or restoration.

Source: www.cityoftacoma.org/makeasplash

RUSS CARMACK/The News Tribune

Dan Borba, whose rain barrel company won a water conservation grant from Tacoma, installs fittings last week in Tacoma.

WATER

CONTINUED FROM B1

ciation, $2,500, to train teachers and environmental educators in water-quality monitoring.

■ First Presbyterian Church School, $2,233, for student field trips to Point Defiance Zoo & Aquarium, Titlow Beach and Snake Lake to learn about wetlands, watersheds and pollution.

■ Pierce Conservation District, $1,000, to create a Swan Creek trail guide and informational brochure.

■ Tacoma School of the Arts, $2,500, to create art that builds public understanding of downtown Tacoma's water resources.

■ Clay and Tracy Waseen, $505, to organize environmentally friendly church car washes.

■ Tacoma Nature Center, $2,500, for teen science day camps at Swan Creek.

■ Tacoma Community House, $2,500, to teach new immigrants and refugees how to properly discard hazardous substances and prevent pollution.

The city plans to make applications for 2005 grants available in March. The deadline for applications is May 1.

Susan Gordon: 253-597-8756
susan.gordon@thenewstribune.com

GET INVOLVED

For information on the Make a Splash program, contact Christy Strand, special project engineer, at 253-502-2105 or e-mail makeasplash@cityoftacoma.org.

APPENDIX D

Tacoma **News Release**

From the City of Tacoma, Washington
www.cityoftacoma.org

FOR IMMEDIATE RELEASE
April 13, 2004

MEDIA CONTACTS
Paul Tollefson, Wastewater Quality Representative, (253) 502-2120
Linda Farmer, APR, Community Relations Officer, (253) 591-5064

Wash this way: Fish-friendly car wash kits available for charity groups

Another season of car washes is about to flood Tacoma. Community and charity groups planning on holding a car wash are encouraged to make it a fish-friendly fundraiser. By using one of the City's free car wash kits, groups can have fun in the sun without harming our local waters.

City of Tacoma Environmental Services loans out free Clean Bay Car Wash Kits to any group holding a car wash in the area. Kits come with all of the necessary equipment to direct the soapy water to the sewer system instead of straight down the storm drains which send their water directly into creeks, lakes or Puget Sound.

The redirection of the soapy water is important because sewer system water, unlike the water that enters the storm drains, is treated before being released into the environment. This treatment process removes the harmful toxins from the water, such as soap. These toxins, if allowed into the water can kill fish and other organisms.

The Clean Bay Car Wash Kits come with easy-to-follow directions and require a power source and access to a sewer drain or sink.

To reserve a kit, contact Paul Tollefson, (253) 502-2120, or ptollefs@cityoftacoma.org. To learn more about the kits, visit www.cityoftacoma.org/carwashkits.

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APPENDIX E

CLEANING UP THE FOSS
City of Tacoma

The Dredge Report

A periodic update on the Thea Foss Waterway cleanup

December 2004

Here's the scoop

Dredges are in the Thea Foss Waterway removing more than a century's worth of pollution. The first relocated boats have begun their temporary stay at the new Dock Street Marina in front of Albers Mill, Museum of Glass and Thea's Landing to make way for dredging and capping under existing marinas and replacing wood piling with new, more environmentally-friendly steel piling.

This is a complicated cleanup with lots of partners and moving parts—and, as we've experienced recently, subject to setbacks.

Lowering the boom: Manson Construction, the City's contractor, uses special equipment and techniques to prevent pollution from spreading during dredging in the Thea Foss Waterway.

Recontamination

The City of Tacoma is working with the U.S. Environmental Protection Agency and its cleanup partners to locate the source of contamination discovered last month in already cleaned areas of the waterway.

The City's contractor, Manson Construction, has been performing cleanup and construction in the southern portion of the City's Superfund site. This area is next to a site that private utility companies Puget Sound Energy and PacifiCorp finished cleaning up in February.

Sediment samples taken in late August from the utility companies' capped area showed traces of a class of compounds called polycyclic aromatic hydrocarbons (PAHs) as well as other contaminants. An oily sheen also was noted on some samples. Samples taken in September near the border between the cleanup sites showed higher concentrations, some higher than the sediment quality objectives set by EPA. A set of contaminants similar to the ones present in August showed elevated levels, including mercury, PAHs, polychlorinated biphenyls (PCBs), phthalates and pesticides.

City project managers notified EPA, the utilities' project manager and other interested parties, and provided copies of the test results. The City is working to identify the potential source of the contamination, how it might be prevented from happening again, and what is the most appropriate fix.

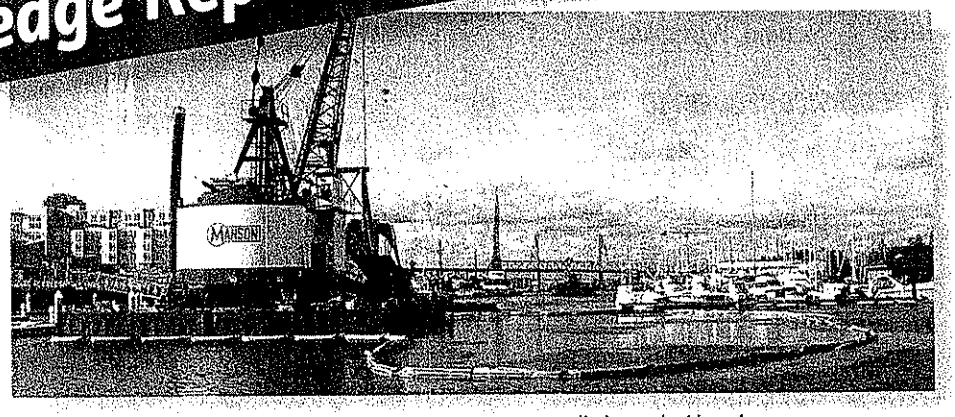
Possible causes under investigation include:

- *Contaminants deposited on the utility companies' cap after City dredging*
- *Contaminants traveling through stormwater pipes or from other off-site sources*
- *Contaminants migrating through the utility companies' cap*

We're not sure yet how this investigation might affect the cleanup plans and schedule. We'll keep you updated through these newsletters and the project Web site at www.cityoftacoma.org/fosscleanup.

continued on other side

The Dredge Report . . . continued



Thea Foss Waterway continues to transform as contractors remove pollution and add marinas.

What's to come

November - February

- Complete Dock Street Marina in front of Albers Mill and the Museum of Glass
- Complete sheet-pile wall around Johnny's Dock Restaurant
- Temporarily move boats in stages from existing marinas to the new marina, clean up under the existing marinas, reinstall and move boats back

August 2005 - February 2006

- Move boats in stages to the new marina
- Install pipeline to carry hydraulically dredged contaminated sediments to the confined disposal facility in the St. Paul Waterway
- Hydraulically dredge channel areas of waterways
- Cap confined disposal facility in the St. Paul Waterway
- Complete fish-friendly habitat along the Thea Foss, Wheeler-Osgood, St. Paul and Middle waterways, and on the Puyallup River

Here's the scoop . . . continued from other side

The City and the utility companies have made substantial investments in cleaning up the waterway. We intend to protect the investment that has been so important to our city's revitalization and the surrounding environment.

Careful construction

Manson Construction takes rigorous precautions when dredging hazardous materials. They use special equipment, plan work sequences carefully and take water and sediment samples frequently.

They place floating barriers, called booms, in the water around the work area and hang long shields from the booms to confine any debris that might be released during dredging.

They also use different kinds of dredge buckets, depending on the area to be cleaned. Clam-shell buckets, named for their shape, which scoop sediments off the waterway floor onto a barge, are used along shorelines and in tighter, smaller areas. Some clam-shell buckets are open at the top to let water drain out; others are closed to prevent release of water or contaminants in highly sensitive areas.

In open-channel areas, contractors plan to use a hydraulic dredge, which essentially vacuums the sediments directly through a pipeline to the disposal site in the St. Paul Waterway. Hydraulic dredges are fast and precise, but their bulk requires more space to maneuver.

All of the Foss cleanup work is monitored carefully by the City's contractor, environmental consultants and inspectors from the U.S. Army Corps of Engineers and EPA. We sample frequently during and after dredging to make sure we're meeting the cleanup targets we've established with EPA.

What's going on here?

The City of Tacoma plans to dredge 525,000 cubic yards of contaminated sediment from a large portion of the Thea Foss and Wheeler-Osgood waterways. That's enough soil to fill more than 38 Museum of Glass cones or about 60 percent of the Tacoma Dome. The contaminated soil will be piped to a confined disposal facility in the St. Paul Waterway, where it will be capped to become buildable land. As part of the three-year project, the City also will build a new marina and about 12 acres of marine habitat.

A group of private utility companies completed cleanup in February 2004 of a smaller portion of the Foss, an area extending from just north of the SR 509 Bridge to the south end of the waterway. Their work included dredging an estimated 7,500 cubic yards of contaminated sediments, capping the area and installing an underwater retaining wall across the waterway.

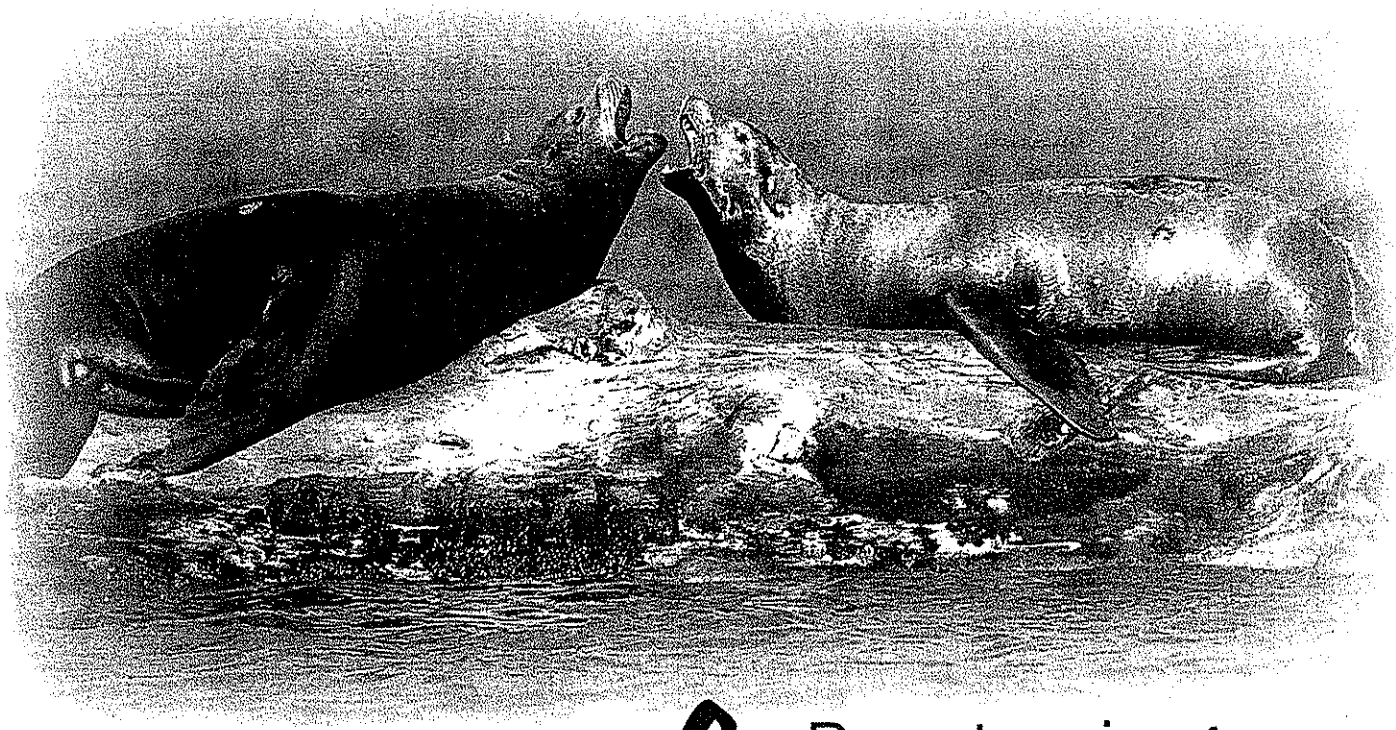
Dock Street Marina

Tenants displaced from existing Foss marinas will use the new Dock Street Marina throughout the cleanup of the waterway, until late 2005 or early 2006. Some guest moorage, however, might be available before then. For more information about short-term guest moorage or the longer-term leasing process when cleanup is complete, please call Dock Street Marina at (253) 272-4352.

Questions?

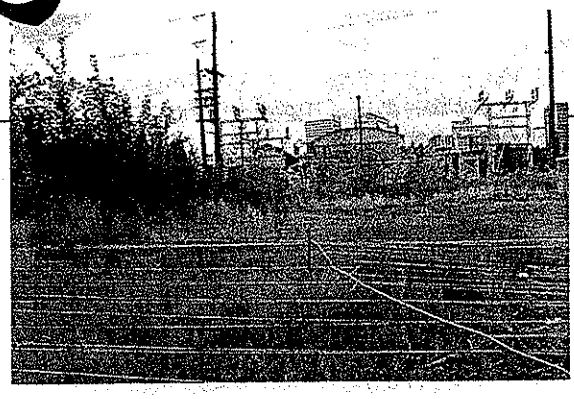
The City of Tacoma and the U.S.

APPENDIX F



Home Restoring habitat

Through the Natural Resource Damage Assessment (NRDA) program, the City of Tacoma received federal approval in 1997 to clean up and restore five Commencement Bay sites degraded by decades of industry and development. These five restoration sites restore almost 38 acres of freshwater and saltwater habitat that salmon and other aquatic species need to thrive.



Middle Waterway

Restoration complete: 2000

Address: 1701 East F Street, Tacoma, Washington

Description: 1.85 acres of salt marsh and upland habitat

The spotted sandpiper now nests where contaminated soils once lay. Imported topsoil and native soils were graded to form riparian and salt marsh habitat. Local volunteers planted native plants to complete the restoration.

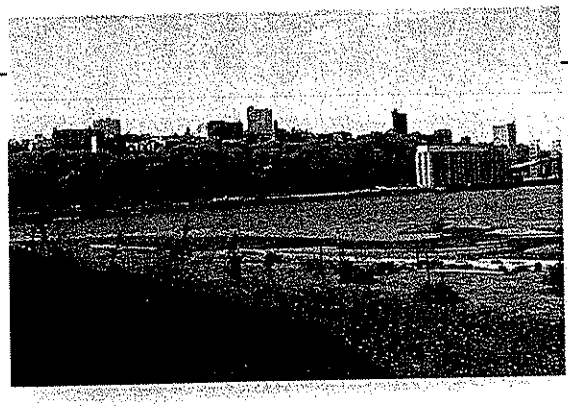
Swan Creek

Restoration complete: 2001

Address: 2717 Pioneer Way East, Tacoma, Washington

Description: 12 acres of wetland preservation and enhancement

Isolated for more than 30 years, the Haire wetland now connects to Swan Creek by a 530-foot channel. This new channel provides salmonid access to rearing, refuge and feeding habitat.



Olympic View Resource Area

Restoration complete: 2002

Address: 202 East F Street, Tacoma, Washington

Description: 12.4 acres of restored shoreline and upland habitat

More than 600 piling, two derelict vessels, an old warehouse and 11,438 tons of contaminated soils were removed to create habitat-friendly slopes on the beach. An eel grass bed just off shore, one of the few remaining in Commencement Bay, is now protected within the restoration site boundary.

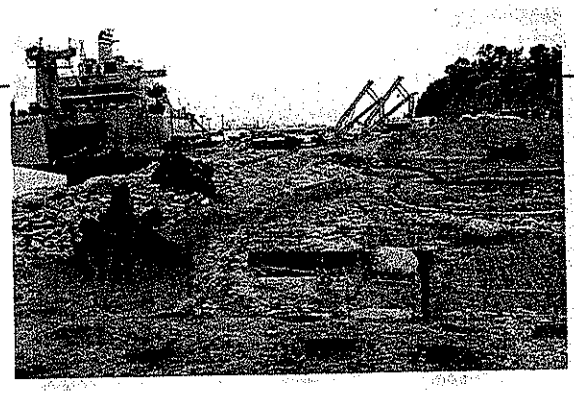
Tahoma Salt Marsh

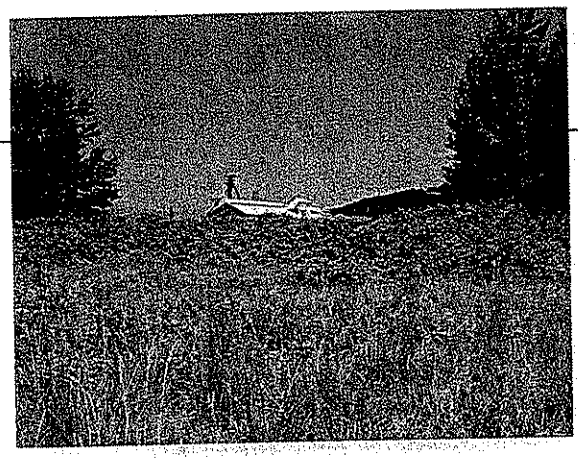
Restoration complete: 2004

Address: 1741 North Schuster Parkway, Tacoma, Washington

Description: 1.95 acres of salt marsh and upland habitat

Located along the Ruston Way shoreline, these new salt marsh and riparian areas provide much-needed salmonid habitat along Commencement Bay's western shoreline. Local volunteers planted native vegetation to complete the project.





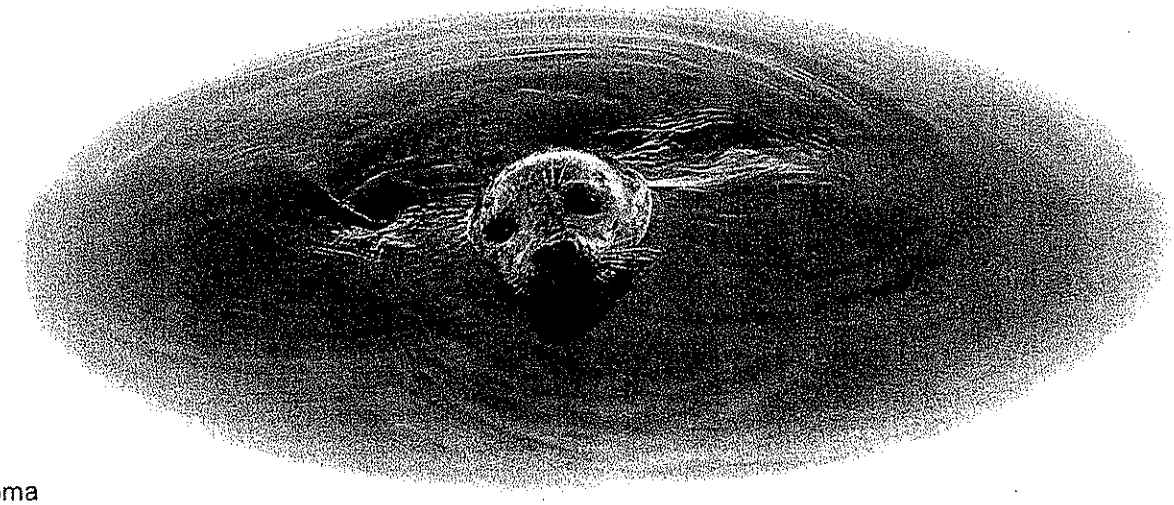
Hylebos Marsh

Restoration complete: Estimate 2005 – 2006

Address: 1216 Taylor Way, Tacoma, Washington

Description: 9.9 acres of wetland preservation and enhancement

Located on the Tacoma Tideflats, this project will create additional open water habitat for such wetland-dependent species as the bald eagle, peregrine falcon, osprey, hooded merganser, great blue heron and other shorebirds and songbirds. Restoration activities will include removing non-native, invasive species, planting bank vegetation and preserving on-site forested wetlands.



Tacoma

City of Tacoma
Public Works/Environmental Services
747 Market Street
Tacoma, Washington 98402

www.cityoftacoma.org/environmentalservices